



# Karnataka State Council for Science and Technology

Indian Institute of Science Campus, Bengaluru - 560 012

Telephone: 080-23341652, 23348848, 23348849 ♦ Telefax: 080-23348840  
Email: office@kscst.iisc.ernet.in, office@kscst.org.in ♦ Website: www.kscst.iisc.ernet.in, www.kscst.org.in

**Dr. S. G. Sreekanteswara Swamy**  
Executive Secretary

Ref: 7.1.01/SPP/08

23th MARCH 2018

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

Dear Sir,

**Sub :** Sanction of Student Project (Biofuel) - 41st Series : Year 2017-2018

**Your Project Proposal Reference No. :**

**41S\_B\_BE\_062**

**Ref :** Your Project Proposal entitled "

INVESTIGATIONS ON PERFORMANCE AND POLLUTION LEVEL ON N-BUTANOL BLENDED PETROL FUELED IC ENGINE (10% TO 50% BLENDING)

I am happy to inform that your project proposal referred above, has been approved by the Secretary, KSCST for "Student Project Programme (Biofuel) 41st Series" and has been sanctioned with a budgetary break-up as detailed below:

Student / s	Mr. Chetan R	Budget	Amount (Rs)
	and others	Materials/Consumables	8,000.00
Guide/s	Prof. Raghuthama Rao	Labor	1,000.00
		Travel	1,000.00
		Analysis	-
Department	Mechanical Engineering	Miscellaneous	500.00
		Report	500.00
		<b>TOTAL</b>	<b>11,000.00</b>
	<b>RUPEES ELEVEN THOUSAND</b>		

The following are the guidelines to carryout the project work :

- The project should be carried out based on the objectives of the proposal sent by you.
- The project should be completed in all respects and **a) One copy** of the hardbound report **b)** Softcopy of the full report (including coverpages, abstract & preliminary pages in a CD (.doc and .pdf format)
- The project report shall mention the name of "Karnataka State Bioenergy Development Board and Karnataka State Council for Science and Technology" as sponsored organisations in the title page. Project Title or the objectives can be altered only with prior permission of KSCST. Any change in the project are strictly prohibited and liable for rejection and the amount sanctioned has to be returned back to KSCST. The fund is to be utilised only for the activities to which it has been released.
- Please quote your **project sanction reference number printed above** in all your future correspondences.
- Important:** After completing the project, 2 to 3 page write-up (synopsis) needs to be sent by e-mail [biofuelcell.kscst@gmail.com] and should include following :

- Title of the project
- Name of the College & Department

Principal  
Sapthagiri College of Engineering  
Hesaraghatta Main Road  
Bengaluru - 560 057

# KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

Indian Institute of Science Campus, Bengaluru – 560 012

Website: <http://www.kscst.iisc.ernet.in/spp.html> || Email: [spp@kscst.iisc.ernet.in](mailto:spp@kscst.iisc.ernet.in) || Phone: 080-23600978

SPP-41

2017-18.

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## STUDENT PROJECTS PROGRAMME - BIOFUEL PROJECTS:41st SERIES – STATE LEVEL SEMINAR AND EXHIBITION

List of Projects Selected for State Level Seminar and Exhibition (S&E) to be held at  
Bapuji Institute of Engineering and Technology, Davanagere on 10<sup>th</sup> and 11<sup>th</sup> August 2018

### 25. SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU

Sl. No.	PROJECT REFERENCE NO.	PROJECT TITLE	BRANCH	NAME OF THE GUIDE	STUDENT 1 & TEAM LEADER	STUDENT 2	STUDENT 3	STUDENT 4	PROJECT SELECTED FOR
34.	41S_B_BE_062	INVESTIGATIONS ON PERFORMANCE AND POLLUTION LEVEL ON N-BUTANOL BLENDED PETROL FUELED IC ENGINE (10% TO 50% BLENDING)	MECHANICAL ENGINEERING	Prof. RAGHUTHAMA RAO	Mr. CHETAN R	Mr. C R ABHIRAM	Mr. KARAN N	Mr. KALOLA NEIL PRAVINBHAI	SEMINAR
35.	41S_B_BE_076	DESIGN AND LAB SCALE ULTRASOUND BATCH REACTOR FOR THE PRODUCTION OF BIODIESEL FROM THE SLAUGHTER WASTE.	BIOTECHNOLOGY	Prof. KAVYA M. V.	Ms. NIRANJANA S.	Ms. VANI VISWANATHAN	-	-	SEMINAR

#### Note:

- You are requested to send the hard bound copy of the project report along with softcopy of the full report in a CD in PDF format.
- Any corrections with respect to Guide and Students name, kindly send an email regarding the same to [biofuelcell.kscst@gmail.com](mailto:biofuelcell.kscst@gmail.com).

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

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

### Scope for future work:

1. By varying different blends and volume of nano particles can be tested.
2. Testing can be done on 4-cylinder engine to understand the emission and performance characteristics better.

~\*~\*~

## INVESTIGATIONS ON PERFORMANCE AND POLLUTION LEVEL ON N-BUTANOL BLENDED PETROL FUELED IC ENGINE (10% TO 50% BLENDING)

**Project Reference No.:** 41S\_B\_BE\_062

COLLEGE : SAPTHAGIRI COLLEGE OF ENGINEERING, BENGALURU  
BRANCH : DEPARTMENT OF MECHANICAL ENGINEERING  
GUIDE : Prof. RAGHUTHAMA RAO  
STUDENTS : Mr. CHETAN R  
Mr. C R ABHIRAM  
Mr. KARAN N  
Mr. KALOLA NEIL PRAVINBHAI

**ABSTRACT:** N-Butanol or *n*-butyl alcohol is a primary alcohol with a 4-carbon structure and the chemical formula  $C_4H_9OH$ . Now-a-days air pollution is becoming a serious problem in many urban cities and it can have a serious effect on the environment. Although experimental studies have shown that alcohol fuels burn cleaner than gasoline and produce lesser emission there is scarce information regarding the comparison among the alcohol fuels as gasoline additive in spark-ignited engines. Experimental investigations are planned both on performance and pollution levels of exhaust gas emissions. N-butanol is to be added to unleaded gasoline by mass percent of 10% to 50% and then will be tested in a four stroke SI engine.

### OBJECTIVES:

1. To reduce atmospheric pollution by decreasing emission levels of petrol engines by using n-butanol blended petrol.
2. To study the reduction in emissions of butanol blended fuel (Studying pollutant elements such as CO, CO<sub>2</sub>, NO<sub>x</sub>, HC).
3. To test the performance of petrol engines by the use of n-butanol blended petrol with various parameters, to reduce the consumption of petrol and to find alternatives for depleting fossil fuel reserves.

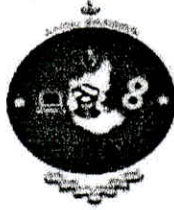
**METHODOLOGY FOR EXECUTING THE PROJECT:** Purchasing and refurbishing a petrol engine and to fix it rigidly on a base frame and set up a prony brake dynamometer to test its performance. Next prepare blended fuel of petrol with n-butanol using a centrifuge from 10% to 50% blends in steps of 10% and conduct the performance test of petrol engine using blended petrol fuel in comparison with unblended petrol fuel and check the emission levels of the exhaust gases when different blends of n-butanol with petrol in comparison with unblended petrol fuel and evaluate optimum blending levels.

**EXPECTED OUTCOME OF THE PROJECT:** Study the performance of petrol engine with the use of n-butanol blended petrol fuel. Reduced emission of pollutants in exhaust gases by the use of n-butanol blended petrol fuel. A comparative study of the changes in performance of the engine is run on butanol blended petrol and unblended petrol. Changes in performance parameters and pollution levels compared to 100% petrol fuelled engine.

**WORK CARRIED OUT:** For evaluation of exhaust and performance characteristics N-Butanol blends up to 50% ratios in 10% increments N10, N20, N30, N40 and N50 are prepared in bio technology department laboratory. 200ml of each blend was prepared and then the engine was run on petrol until it ran stable. After that the performance of the engine i.e. brake power, brake specific fuel consumption (bsfc), brake thermal efficiency, brake mean effective pressure were evaluated. The engine was tested at a constant speed of 420 rpm with varying loads from 0 kg with steps of 2 kg up to 10 kg. The engine was loaded using a rope brake dynamometer setup. Emission characteristics test for the engine with all Blends was done in a government certified test center for biofuel research in Vemana Institute of Technology using an "Automotive Emission Analyzer (QRO-401 Series)" and CO, CO<sub>2</sub>, HC, O<sub>2</sub> and NO<sub>x</sub> levels were determined.

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**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
**BELAGAVI, KARNATAKA, INDIA**



**A PROJECT REPORT**  
**ON**

**INVESTIGATIONS ON PERFORMANCE AND POLLUTION**  
**LEVELS ON N-BUTANOL BLENDED PETROL FUELED**  
**ENGINE (10% TO 50% BLENDING)**

*A report submitted in the partial fulfillment of the requirements for the award of*  
*the degree of*

***Bachelor of Engineering***

***in***

***Mechanical Engineering***

**Submitted by**

<b>CHETAN R</b>	<b>1SG14ME026</b>
<b>C R ABHIRAM</b>	<b>1SG14ME021</b>
<b>KALOLA NEIL PRAVINBHAI</b>	<b>1SG14ME044</b>
<b>KARAN N</b>	<b>1SG14ME046</b>

*Under the guidance of*  
**Mr. P Raghuthama Rao**  
**Associate Professor**  
**Dept. of M.E, S.C.E**



**DEPARTMENT OF MECHANICAL ENGINEERING**  
**SAPTHAGIRI COLLEGE OF ENGINEERING**

**Bengaluru-57**

**2017-18**

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

19

**SAPTHAGIRI COLLEGE OF ENGINEERING**  
14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru-560057  
[AFFILIATED TO VIVSVESWARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI]

**Department of Mechanical Engineering**

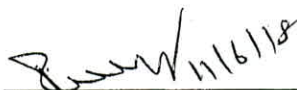


**CERTIFICATE**

Certified that the project work entitled INVESTIGATIONS ON PERFORMANCE AND POLLUTION LEVELS ON N-BUTANOL BLENDED PETROL FUELED ENGINE (10% TO 50% BLENDING) carried out by CHETAN R(1SG14ME026), C R ABHIRAM(1SG14ME021), KALOLA NEIL PRAVINBHAI(1SG14ME044) and KARAN N(1SG14ME046), bonafide students of 8<sup>th</sup> semester, department of Mechanical Engineering carried out at our college Sapthagiri College of Engineering, Bengaluru in partial fulfillment of the award of **Bachelor of Engineering in Mechanical Engineering** of the **Visvesvaraya Technological University, Belagavi** during the year 2017-18. 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 said Degree.

 11.6.2018

Prof Raghuthama Rao  
Associate Professor  
Signature of the Guide

 11/6/18

Dr. P Mahadevaswamy  
Head of the Dept.  
Signature of the HOD

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

 11/6/18



Dr. K L Shivabasappa  
Principal  
Signature of the Principal  
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesaraghatta Road  
Bangalore-560 057

**External Viva**

Name of the Examiners

1. Dr. Mahadevaswamy P
2. S.R. GOWDARAO A

Signature of the Examiners with date

1.  12/6/18
2.  12/6/18



# Karnataka State Council for Science and Technology

Indian Institute of Science Campus, Bengaluru - 560 012

Telephone: 080 23341052, 23348848, 23348849 • Telefax: 080 23348840

Email: office@kscst.iisc.ernet.in, office@kscst.org.in • Website: www.kscst.iisc.ernet.in, www.kscst.org.in

**Dr. S. G. Sreekanteswara Swamy**  
Executive Secretary

20th March 2018

Ref: 7.1.01/SPP/08

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

Dear Sir,

Sub : Sanction of Student Project - 41st Series; Year 2017-2018  
Your Project Proposal Reference No. : **41S\_DR\_2106**

Ref : Your Project Proposal entitled " **REAL TIME FREE PARKING SLOTS TRACKING USING IoT TECHNOLOGY**

I am happy to inform that your project proposal referred above, has been approved by the Secretary, KSCST for "Student Project Programme - 41st Series" and has been sanctioned with a budgetary break-up as detailed below:

Student / s	Ms. Neetha Pal K and others	Budget	Amount (Rs)
		Materials/Consumables	3,500.00
Guide/s	Prof. Prerana Chalthra	Labor	-
		Travel	-
Department	Information Science And Engineering	Miscellaneous	500.00
		Report	500.00
		TOTAL	4,500.00
RUPEES FOUR THOUSAND FIVE HUNDRED			

The following are the guidelines to carryout the project work :

- The project should be performed based on the objectives of the proposal sent by you.
- The project should be completed in all respects and one copy of the hardbound report along with softcopy of the full report in a CD (.pdf format) should be submitted to KSCST.
- Any change in the project title and objectives, etc., or students is liable to rejection of the project and the amount sanctioned needs to be returned to KSCST.
- Please quote your **project sanction reference number printed above** in all your future correspondences.
- Important:** After completing the project, 2 to 3 page write-up (synopsis) needs to be sent by e-mail [spp@kscst.iisc.ernet.in] and should include following :
  - Title of the project
  - Name of the College & Department
  - Name of the students & Guide(s)
  - Keywords

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

6) Introduction / background

(with specific reference to the project, work done earlier, etc) - about 20 lines

41S\_BE\_2106

6) Objectives (about 10 lines)

7) Methodology (about 20 lines)

(materials, methods, details of work carried out, including drawings, diagrams etc)

8) Results and Conclusions

(about 20 lines with specific reference to work carried out)

9) Scope for future work (about 20 lines).

**(Note: The write-up (Synopsis) should be sent with the approval of project guide. The softcopy of the write-up, in MS Word format, should be sent by e-mail (spp@kscst.iisc.ernet.in). In your e-mail, please also include project proposal reference number and title of the project.)**

e) Projects selected for Seminar / Exhibition will be awarded.

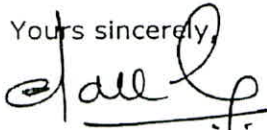
The sanctioned amount will be sent separately by our Accounts Department.

**The sponsored projects evaluation will be held in the Nodal Centre and the details of the nodal centre will be intimated shortly by e-mail / Website announcement.**

Please visit our website for further announcements / information and for any clarifications please email to spp@kscst.iisc.ernet.in

Thanking you and with best regards,

Yours sincerely,

  
(S.G.S. Swamy)

Prof. Prerana Chaithra, 15  
  
23/4/18

Copy to:

- 1) The Head of the Department of Information Science And Engineering  
Sapthagiri College Of Engineering,  
#14/5, Chickasandra,  
Hesaraghatta Main Road,  
Bengaluru - 560 057.
- 2) Prof. Prerana Chaithra  
Department of Information Science And Engineering  
Sapthagiri College Of Engineering,  
#14/5, Chickasandra,  
Hesaraghatta Main Road,  
Bengaluru - 560 057.
- 3) The Finance Officer, KSCST, Bangalore

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



**KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY**  
Indian Institute of Science campus, Bengaluru

**FORMAT FOR STUDENT PROJECT PROPOSAL FOR  
OF STUDENT PROJECT PROGRAMME**

(Hand written proposals will not be accepted, please fill all the details in this MS word file as per the following format. Kindly take a photocopy of completely filled project proposal and Demand Draft for filling up the Google Forms.)

**Stream A**

1.	Name of the College : SAPTHAGIRI COLLEGE OF ENGINEERING
2.	Project Title : Real time free parking slots tracking using IoT technology
3.	Branch: Information Science & Engineering
4.	Theme (as per KSCST poster) : SPP
5.	Name(s) of project guide(s) : 1. Name: Prof. Prerana Chaithra Email id : preranachaithra15@gmail.com Contact No.: 9886715998
6.	Name of Team Members (Strictly not more than four students in a batch): (Please paste the latest passport size photograph adjacent to your respective names) Name: Neeta Pai K USN No.:1SG14IS054  Name: Ankita Ganapati Bhat USN No.:1SG14IS009  Name: Anusha S USN No.:1SG14IS012
7.	Team Leader of the Project : Name: Neeta Pai K USN No.:1SG14IS054
8.	Processing Fee Details (Demand Draft should be drawn from Canara Bank / State Bank of India only): (processing fee of Rs. 1000/- drawn in favour of Secretary, KSCST, Bangalore - 12) Bank name:  Note :Please write Team leader name, Project Title and Name of the College on the backside of the DD.

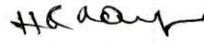
Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesarghatta Road,  
Bangalore-560 057

9.	<b>Date of commencement of the Project : 15/02/2018</b>							
10.	<b>Probable date of completion of the project : 20/05/2018</b>							
11.	<b>Scope / Objectives of the project:</b> 1. To create flawless parking management system 2. To solve the parking problem by using automated parking system							
12.	<b>Methodology:</b> 1) Understood the domain first 2) Embedded C is used for implementation							
13.	<b>Expected Outcome of the project :</b> Gives the idea interfacing to Wifi module Improve parking facilities of metropolitan cities							
14.	<b>Is the project proposed relevant to the Industry or Institution? :</b>  <b>Yes / No : no</b>  <b>If Yes, Please provide details of the Industry / institution and contact details :</b> (Note: Preference will be given to those projects relevant to the industry / institution. Hence be specific in giving detailed information). Is the industry extending support - technology / funds / use the final product, please specify.							
15.	<b>Can the product or process developed in the project be taken up for filing a Patent?</b> <b>Yes / No : no</b>  <b>Prior Art search done?</b> <b>Yes/No :</b> <b>Note:</b> If Yes, you may contact Patent Information Centre of KSCST for more details Email : patent@kscst.iisc.ernet.in							
16.	<b>Budget details (break-up details should be given) :</b> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Budget</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>a) Materials / Consumables</td> <td>4500.00</td> </tr> <tr> <td>b) Labor</td> <td>0.00</td> </tr> </tbody> </table>		Budget	Amount	a) Materials / Consumables	4500.00	b) Labor	0.00
Budget	Amount							
a) Materials / Consumables	4500.00							
b) Labor	0.00							

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

		c) Travel	0.00	
		d) Report	0.00	
		e) Miscellaneous	0.0	
		<b>Total</b>	4500.00	
17.	<b>Any other technical details (Please specify) :</b>			
18.	<b>SPP Coordinator (Identified by the college) :</b> <b>Note:</b> To be identified by the principal of the institution. The project proposals must be submitted to KSCST through SPP coordinator designated by the Principal.  <b>Name: Prof. Ravishankar M N</b> <b>Email id : ravishankarmn@sapthagiri.edu.in</b> <b>Contact No.: 9916592006</b>			

  
 (Name & Signature of Project Guide with Seal)  
 Prof. Prerana Chaithra

  
 (Name & Signature of HOD with Seal)  
 Dr. H R Ranganatha  
 Prof. & H.O.D  
 Dept. of Information Science & Engg.  
 Sapthagiri College of Engineering  
 # 14/5 Chikkasandra, Hesaraghatta Main Road  
 BENGALURU-560 057

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

# "REAL TIME FREE PARKING SLOTS TRACKING USING IoT TECHNOLOGY"

## SAPTHAGIRI COLLEGE OF ENGINEERING INFORMATION SCIENCE AND ENGINEERING

REFERENCE NO.:41S\_BE\_2106

### GROUP MEMBERS:

NAME	USN	E-mail ID	Phone No.
NEETHA PAIK.	1SG14IS054	neethapai65@gmail.com	8152942188
ANKITA GANAPATI BHAT	1SG14IS009	ankitabhat878@gmail.com	7760508612
ANUSHIA S.	1SG14IS012	anurao096@gmail.com	9740367241

### GUIDE DETAILS:

Prof. PRERANA CHAITHRA

Associate Professor

Information Science and Engineering

9886715998

preranachaithra15@gmail.com

**KEYWORDS:**Internet of Things, IR Proximity Sensors, Arduino UNO, ESP8266 Wi-Fi Chip, LED, AWS Technology

### INTRODUCTION:

Consistent efforts are being made in the field of IoT in order to maximize the productivity and reliability of urban infrastructure. Problems such as, traffic congestion, limited car parking facilities and road safety are being addressed by IoT. Finding a parking space in most metropolitan areas, especially during the rush hours, is difficult for drivers. The difficulty arises from not knowing where the available spaces may be at that time; even if known, many vehicles may pursue very limited parking spaces to cause serious traffic congestion. This project presents a customized design of an Internet of Things (IoT) enabled parking system to solve the parking problem in city. A real time web link is provided that allows an end user to check the availability of parking space.

### OBJECTIVES:

- To create a flawless parking management system with the help of sensor systems and IoT technology.
- To solve the parking problem by using an automated parking system.

  
Principal  
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Chikkasandra, Hesarghatta Road  
Bangalore-560 057

Scanned by CamScanner

- To inform the drivers in advance about the availability of parking spaces at and around their intended destination.
- To facilitate effective utilization of resources.
- To provide better quality of services for parking vehicles.

## METHODOLOGY:

- We understood the domain first
- Literature survey was conducted
- System architecture used is Event Driven architecture
- System design and detailed system design were done
- Embedded C was used for implementation
- Testing was done (unit test, integration and system tests)

Details are as follows:

## MODULES :

**1.IR Proximity Sensor** A proximity sensor is a sensor that emits infrared radiation which is able to detect the presence of the nearby objects without any physical contact. The IR Proximity sensors sense the presence or absence of vehicles and sends this data to the Arduino board.

**2.Arduino UNO** Arduino UNO is a widely used open source microcontroller board based on the ATmega328 microcontroller. Arduino board processes the data and sends the result as the status of individual parking slots to the WiFi microchip.

**3.ESP8266 Wi-Fi Module** ESP8266 is a low cost Wi-Fi microchip with full TCP/IP stacks and microcontroller capability. The WiFi microchip uses the data connection from the WiFi router and sends the final result of the availability of parking slot to the Amazon Cloud Server.

**4.Amazon Cloud Server Amazon Web Services (AWS)** is a subsidiary of Amazon.com that provides on-demand cloud computing platforms to individuals, companies and governments, on a paid subscription basis. The user gets the real time information from the this cloud server.

We have worked on system design and detailed design by knowing main userdefined functions, packages used and built in functions.

We also have refered paper such as:

AbhirupKhanna-IOT based smart parking system-----Recent times the concept of smart cities have gained grate popularity. In 2016.

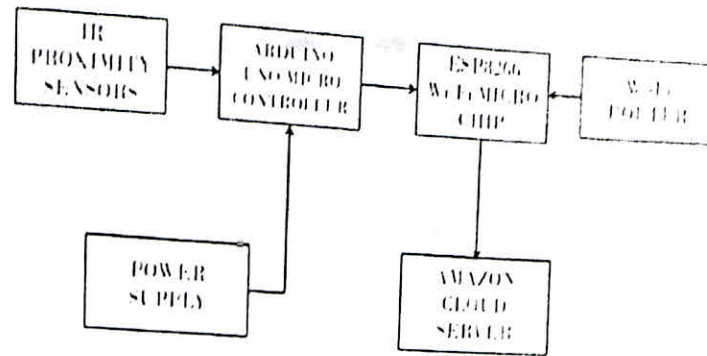
Mr. Basavaraju S R , 'Carmatic Smart Parking System using IoT ', in 2015

D. J. Bonde "Carmated car parking system commanded by android application" Jan-2012, pp 79-92.

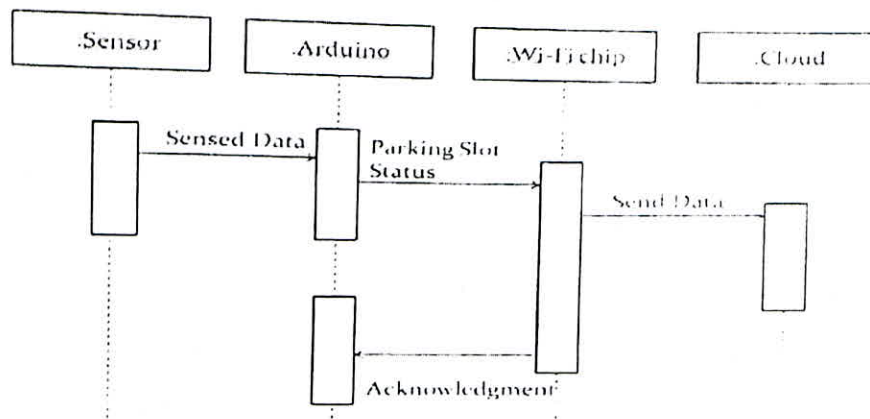
M.A.R. Sarkar, A.A. Rokoni, M.O. Reza, M.F. Ismail, "Smart Parking system with image processing facility", I.J. Intelligent Systems and Applications, 2012, vol. 3, pp. 41-47

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

## DIAGRAMS: SYSTEM DESIGN:



## SEQUENCE DIAGRAM:




## RESULT AND CONCLUSION:

This project gives the idea of interfacing to Wi-Fi module which sends the data to internet cloud and we can see the real-time parking data using web link generated from cloud. The proposed system provides real time information regarding availability of parking slots in a parking area. Users from remote locations could track the free parking slot by the use of mobile application. This paper is indented to improve the parking facilities of metropolitan cities and thereby aiming to enhance the quality of life of people. Based on the simulation study, we conclude that the proposed real time parking system can reduce the traffic congestion and noise pollution at the parking area.

## FUTURESCOPE:

- An android application can be developed with parking reservation system using the parking slots real-time information.
- Online booking of parking slots can be facilitated.
- It could be scalable for more number of parking slots.
- In large scale, RFID technology can be used for wireless connection of components.

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

We request you to please furnish the following details to Dr. B.E. Rangaswamy, Dean, R&D and Professor & HoD, Dept. of Biotechnology (Contact No.: 9844622611 and Email: biet41ksect@gmail.com) Registration Committee Coordinator Dr. Poornima B., HoD, Dept. of Information Science and Engineering (Contact No.: 9844756458 and Email: poornimateju@gmail.com), Mr. Patil N.S. and (Contact No.: 9886840401 and Email: patilbathi@gmail.com) and Mrs. Shilpa M. Yadawad (Contact No. 9916570350 and Email-id: shilpamy07@gmail.com) Department of Information Science and Engineering of Bapuji Institute of Engineering and Technology (not later than **20<sup>th</sup> of July 2018**).

- Number of persons participating in the Seminar and Exhibition with their title of project, name of student, name of the Project Guide, Department, schedule of Travel etc., (i.e., date and time of arrival at Davanagere).
- Power, water, space and other requirements for the exhibits.
- Area required for displaying your project, charts and photographs.
- Area required for model exhibits.
- Accommodation facilities required for the faculty and students.
- Arrangements and help required for handling of exhibits.
- Any other specific requirement in connection with Exhibition.

Kindly ensure that the exhibits are installed in the stalls allotted to you well in advance i.e., before 6.00pm of 9<sup>th</sup> of August 2018 or before 9.00am on 10<sup>th</sup> August 2018.

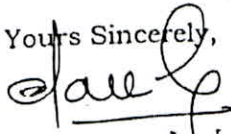
For project related queries, you may please contact Mr. Keshava K. N., Project Associate, KSCST, 080-23600978, 9731282977.

Please ensure that the synopsis of the projects (softcopy), as per the format given in project sanction letter (in MS-Word), are sent to spp@kscst.iisc.ernet.in. Further, we also request you to send the hard copy of the project reports along with softcopy of the full report in a CD (PDF format) immediately.

Details of the programme and invitation will be sent to you shortly.

Thanking you and with best regards,

Yours Sincerely,



(S.G.S. Swamy)

Encl: List of Projects selected from your college.

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



# Karnataka State Council for Science and Technology

Indian Institute of Science Campus, Bengaluru - 560 012

Telephone: 080-23341652, 23348848, 23348849 ♦ Telefax: 080-23348840

Email: office@kscst.iisc.emet.in, office@kscst.org.in ♦ Website: www.kscst.iisc.emet.in, www.kscst.org.in

**Dr. S. G. Sreekanteswara Swamy**  
Executive Secretary

28th March 2018

Ref: 7.1.01/SPP/08

The Principal,  
Sapthagiri College of Engineering,  
#14/5, Chickasandra,  
Hesaraghatta Main Road,  
Bengaluru - 560 057.

Dear Sir,

Sub : Sanction of Student Project - 41st Series: Year 2017-2018

Your Project Proposal Reference No. : 41S\_BE\_0470

Ref : Your Project Proposal entitled " **WOMEN SECURITY SYSTEM** "

I am happy to inform that your project proposal referred above, has been approved by the Secretary, KSCST for "Student Project Programme - 41st Series" and has been sanctioned with a budgetary break-up as detailed below:

Student / s	Ms. Divya Vidaya and others	Budget	Amount (Rs)
		Materials/Consumables	4,000.00
Guide/s	Prof. Aswatha Kumar.M.	Labor	-
		Travel	-
Department	Electronics And Communication Engineering	Miscellaneous	500.00
		Report	500.00
		TOTAL	5,000.00
	RUPEES FIVE THOUDSAND		

The following are the guidelines to carryout the project work :

- The project should be performed based on the objectives of the proposal sent by you.
- The project should be completed in all respects and one copy of the hardbound report along with softcopy of the full report in a CD (.pdf format) should be submitted to KSCST.
- Any change in the project title and objectives, etc., or students is liable to rejection of the project and the amount sanctioned needs to be returned to KSCST.
- Please quote your **project sanction reference number printed above** in all your future correspondences.
- Important:** After completing the project, 2 to 3 page write-up (synopsis) needs to be sent by e-mail [spp@kscst.iisc.ernet.in] and should include following :
  - Title of the project
  - Name of the College & Department

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

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

## 6) Introduction / background

(with specific reference to the project, work done earlier, etc) - about 20 lines

## 6) Objectives (about 10 lines)

## 7) Methodology (about 20 lines)

(materials, methods, details of work carried out, including drawings, diagrams etc)

## 8) Results and Conclusions

(about 20 lines with specific reference to work carried out)

## 9) Scope for future work (about 20 lines).

**(Note: The write-up (Synopsis) should be sent with the approval of project guide. The softcopy of the write-up, in MS Word format, should be sent by e-mail (spp@kscst.iisc.ernet.in). In your e-mail, please also include project proposal reference number and title of the project.)**

e) Projects selected for Seminar / Exhibition will be awarded.

The sanctioned amount will be sent separately by our Accounts Department.

**The sponsored projects evaluation will be held in the Nodal Centre and the details of the nodal centre will be intimated shortly by e-mail / Website announcement.**

Please visit our website for further announcements / information and for any clarifications please email to spp@kscst.iisc.ernet.in

Thanking you and with best regards,

Yours sincerely,



(S.G.S. Swamy)

Copy to:

1) The Head of the Department of  
Electronics And Communication Engineering  
Sapthagiri College Of Engineering,  
#14/5, Chickasandra,  
Hesaraghatta Main Road,  
Bengaluru - 560 057.

2) Prof. Aswatha Kumar.M.  
Department of Electronics And Communication Engineering  
Sapthagiri College Of Engineering,  
#14/5, Chickasandra,  
Hesaraghatta Main Road,  
Bengaluru - 560 057.

3) The Finance Officer, KSCST, Bangalore

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

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

**A PROJECT REPORT**  
**On**  
**WOMEN SECURITY SYSTEM**

Sponsored by  
Karnataka State Council for Science and Technology (KSCST) - Bangalore

Submitted to  
Visvesvaraya Technological University  
Belgavi, Karnataka – 590018



*in Partial fulfillment for the award of degree in*

**Bachelor of Engineering**

*During VIII Semester of*

**Electronics and Communication Engineering**

*for the academic year 2017-18*

*Submitted by*

<b>DIVYA VIDAYA</b>	<b>1SG14EC029</b>
<b>KAVYASHREE.S.G.</b>	<b>1SG15EC409</b>
<b>V.NIHARIKA</b>	<b>1SG14EC107</b>
<b>SHALU THAKUR</b>	<b>1SG14EC088</b>

Under the guidance of

**Mr. Ravi Shankara.M.N.**

Associate Professor, Dept. of ECE, SCE

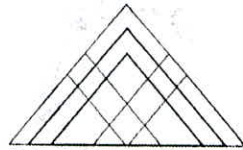


2017-18

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION  
ENGINEERING**

**SAPTHAGIRI COLLEGE OF ENGINEERING**  
14/5, Chikkasandra, Hesaraighatta Main Road, Bengaluru– 560057

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



**SAPTHAGIRI**  
College of Engineering

Creating Tommorrow

**SAPTHAGIRI COLLEGE OF ENGINEERING**

14/5, Chikkasandra, Hesaraghatta Main Road, Bangaluru- 560057

**Department of Electronics and Communication Engineering**

**CERTIFICATE**

Certified that the project work entitled "**WOMEN SECURITY SYSTEM**", carried out by Ms. Divya Vidya (1SG14EC029), Ms. Kavyashree.S.G (1SG15EC409), Ms. V.Niharika (1SG14EC107), Ms. Shubh Thakur (1SG14EC088) bonafide students of 8<sup>th</sup> Semester Electronics and Communication Engineering in partial fulfillment for the award of **Bachelor of Engineering** in Sapthagiri College of Engineering of the Visvesvaraya University, Belgavi during the year 2017-18. 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 said Degree.

Signature of the Guide

Signature of the HOD

Signature of the Principal

External Viva

Signature of the examiners

Principal

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

Signature with date

## ABSTRACT

Women all over the world are facing much unethical physical harassment. The status of women has gone through many great changes over the past few millennia. According to a global poll conducted by Thomson Reuters, India is the "Fourth most dangerous country" in the world for women.

This project is about providing additional enhanced features that can be implemented in the currently available safety devices. The proposed system is a portable device which assembles a prototype model that uses two mini devices - the Wristband and the Spectacles.



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

## CHAPTER 1

### INTRODUCTION

The status of women in India has gone through many great changes over the past few millennia. From equal status with men in ancient times, through the low points of the medieval period, to the promotion of equal rights by many reformers, the history of women in India has been eventful. In modern India, women continue to face social challenges and are often victims of abuse and violent crimes.

According to a global poll conducted by Thomson Reuters, India is the “Fourth Most Dangerous Country in the World for Women”, and the “Worst Country for Women among the G20 Countries”.

Not only in India, but women all over the world are facing much unethical physical harassment. But the greatest motivation for this project was the Delhi “Nirbhaya” case that triggered the whole nation. It was high time we women needed a change.

The rapid development of electronics provides secured environment to the human. As a part of this ‘WOMAN SECURITY SYSTEM’ is designed to reduce the risk of accidents. This is a device which reduces the problem associated with the accident notification.

This project focuses on a smart security system that is designed solely to serve the purpose of providing security and safety to women so that they never feel helpless while facing such social challenges. This acquires a fast pace due to lack of a suitable surveillance system.

We are proposing a prototype model that can be used in the form of two objects ~~wisdom~~ and spectacles that are being used in day to day life.

## CHAPTER 8

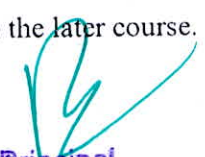
### FUTURE SCOPE AND CONCLUSION

#### 8.1 Future scope

The prototype model can be integrated into a wearable device. As the technological changes or new requirement from user to enhance the functionality of product may requires new version to be introduced. Although the system is complete and working efficiently, new modules which enhance the system functionality can be added without any major changes to the entire system. The concept can be used to provide the security for women, physically challenged people, children safety, vehicle safety and other valuable safety system module.

#### 8.2 Conclusion

- Woman in danger is saved by either people nearby her or by the person listed in the emergency contact.
- Also, the tear gas mechanism may help the victim in buying some time to save herself.
- The recorded video can be used as an evidence for providing justice in the later course.

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



## Karnataka State Council for Science and Technology

Indian Institute of Science Campus, Bengaluru - 560 012

Telephone: 080-2334 1652, 2334 8848, 2334 8849 ♦ Telefax: 080-2334 8840

Email: office@kscst.iisc.ernet.in, office@kscst.org.in ♦ Website: www.kscst.iisc.ernet.in, www.kscst.org.in

**Dr. S. G. Sreekanteswara Swamy**  
Executive Secretary

28th MARCH 2018

Ref: 7.1.01/SPP/08

The Principal,  
Sapthagiri College of Engineering,  
#14/5, Chickasandra, Hesaraghatta Main Road,  
Bengaluru - 560 057.

Dear Sir,

Sub : Sanction of Student Project (Biofuel) - 41st Series : Year 2017-2018

Your Project Proposal Reference No. :

**41S\_B\_BE\_076**

Ref : Your Project Proposal entitled "

**DESIGN AND LAB SCALE ULTRASOUND BATCH REACTOR FOR THE PRODUCTION OF BIODIESEL FROM THE SLAUGHTER WASTE.**

I am happy to inform that your project proposal referred above, has been approved by the Secretary, KSCST for "Student Project Programme (Biofuel) 41st Series" and has been sanctioned with a budgetary break-up as detailed below:

Student / s	Ms. Niranjana S.	Budget	Amount (Rs)
	and others	Materials/Consumables	7,000.00
Guide/s	Prof. Kavya M. V., Prof. Shobha G.	Labor	-
	& Mrs. Soumya C	Travel	500.00
		Analysis	-
Department	Biotechnology	Miscellaneous	500.00
		Report	500.00
		<b>TOTAL</b>	<b>8,500.00</b>
<b>RUPEES EIGHT THOUSAND FIVE HUNDRED</b>			

The following are the guidelines to carryout the project work :

- The project should be carried out based on the objectives of the proposal sent by you.
- The project should be completed in all respects and **a) One copy** of the hardbound report **b) Softcopy** of the full report (including coverpages, abstract & preliminary pages in a CD (.doc and .pdf format)
- The project report shall mention the name of "**Karnataka State Bioenergy Development Board and Karnataka State Council for Science and Technology**" as sponsored organisations in the title page. Project Title or the objectives can be altered only with prior permission of KSCST. Any change in the project are strictly prohibited and liable for rejection and the amount sanctioned has to be returned back to KSCST. The fund is to be utilised only for the activities to which it has been released.
- Please quote your **project sanction reference number printed above** in all your future correspondences.
- Important:** After completing the project, 2 to 3 page write-up (synopsis) needs to be sent by e-mail [biofuelcell.kscst@gmail.com] and should include following :

- Title of the project
- Name of the College & Department

Sapthagiri College of Engineering  
Chickasandra, Hesaraghatta  
Bengaluru - 560 057

3) Name of the students & Guide(s)

41S\_B\_BE\_076

4) Keywords

5) Introduction / background

(with specific reference to the project, work done earlier, etc) - about 20 lines

6) Objectives (about 10 lines)

7) Methodology (about 20 lines)

(materials, methods, details of work carried out, including drawings, diagrams etc)

8) Results and Conclusions

(about 20 lines with specific reference to work carried out)

9) Scope for future work (about 20 lines).

**(Note: The write-up (Synopsis) should be sent with the approval of project guide. The softcopy of the write-up, in MS Word format, should be sent by e-mail (biofuelcell.kscst@gmail.com). In your e-mail, please also include project proposal reference number and title of the project.)**

e) Best Projects will be awarded in Final Seminar / Exhibition.

The amount sanctioned for the selected projects will be sent by cheque.

**The Mid term evaluation of the sponsored projects evaluation details will be intimated shortly by email / Website announcement..**

Please visit our website for further announcements / information and for any clarifications please email to biofuelcell.kscst@gmail.com

Thanking you and with best regards,

Yours sincerely,

SD/-

Copy to:

- 1) The Head of the Department of  
Biotechnology  
Sapthagiri College of Engineering,  
# 14/5, Chickasandra, Hesaraghatta Main Road,  
Bengaluru - 560 057
- 2) Prof. Kavya M. V., Prof. Shobha G. & Mrs. Soumya C  
Department of Biotechnology  
Sapthagiri College of Engineering,  
# 14/5, Chickasandra, Hesaraghatta Main Road,  
Bengaluru - 560 057
- 3) The Finance Officer, KSCST, Bangalore

*f Km'*

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

*B*

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

# **DESIGN OF LAB SCALE ULTRASOUND BATCH REACTOR FOR THE PRODUCTION OF BIODIESEL FROM THE SLAUGHTER WASTE**

**A Project Report submitted to the Karnataka State Council For  
Science And Technology  
(KSCST-2017-18)**

**Submitted By**

**Niranjana Srikrishnan**

Department of Biotechnology  
Sapthagiri College of Engineering

**Under the guidance of**

**Mrs Kavya M V**

Assistant Professor  
Department of Biotechnology  
Sapthagiri College of Engineering


**Mrs. Shobha G**

Assistant Professor  
Department of Biotechnology  
Sapthagiri College of Engineering

**Mrs. Soumya C**

Assistant Professor  
Department of Biotechnology  
Sapthagiri College of Engineering

Submitted to  
**KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY  
INDIAN INSTITUTE OF SCIENCE CAMPUS,  
BENGALURU - 560012  
Karnataka**

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

# SAPTHAGIRI COLLEGE OF ENGINEERING

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



## DEPARTMENT OF BIOTECHNOLOGY

### CERTIFICATE

This is to certified that the project work entitled “Design of lab scale ultrasound batch reactor for the production of biodiesel from the slaughter waste” has been carried out by Ms. Niranjana S, bonafide student of VIII semester B.E in Biotechnology of Sapthagiri College of Engineering, under scheme of The Karnataka State Council For Science And Technology during the academic year 2017-2018. The research is a record of original work carried out by them, in Department of Biotechnology, Sapthagiri College of Engineering, Bangalore, Karnataka, under our guidance and supervision and it has not formed the basis for the award of any Degree.

Signature of Guides

1.

2.

3.

Signature of HOD

Signature of Principal

Principal

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

## 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: 21/11/2017**

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

**Sub-** Sanction of Research grant for the research project “Analysis and Design of Multistoried Parking Building Proposed at Jalahalli Cross”

With reference to the letter dated 2/10/2017 regarding the research funding, the management of Sapthagiri college of engineering has sanctioned the Research grant of **Rs.2,80,000 ( Rupees two lakh eighty thousand only)** for the research project “Analysis and Design of Multistoried Parking Building Proposed at Jalahalli Cross” to be carried out by the department of Civil Engineering. The management wishes the department success.



**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**

## 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: 22/11/2017

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 "Analysis and Design of Multistoried Parking Building Proposed at Jalahalli Cross"

The management of Sapthagiri college of engineering has sanctioned the Research grant of Rs.2,80,000 ( **Rupees two lakh eighty thousand only**) for the research project "Analysis and Design of Multistoried Parking Building Proposed at Jalahalli Cross" to be carried out by the department of Civil Engineering.

Copy To,

All Departments

  
Principal

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

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

Date: 2/10/2017

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To,

The Principal  
Sapthagiri College of Engineering  
Bangalore-560057

Through HOD & RDECI

From

Pramod K R  
Department of Civil Engineering  
Sapthagiri College of Engineering  
Bangalore-560057

Respected Sir,

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

With respect to above subject, I request your kind self to provide financial assistance to carry out the project entitled "ANALYSIS AND DESIGN OF MULTY STOREYD PARKING BUILDING". The research proposal and budget split up has enclosed along with this letter. Kindly consider the requisition and do the need full.

Thanking you

yours sincerely

RDECI

  
(PRAMOD K.R.)

*Forwarded to principal  
@ for T.L  
HOD, Dept. of Civil  
S.C.E, Bangalore-560057*

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

*enclosure  
- All letters -  
- Tax Invoice -*

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

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

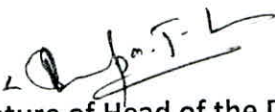
23


# RESEARCH PROPOSAL

## A. GENERAL INFORMATION

1	About the project		
A	Title of the project	:	ANALYSIS AND DESIGN SOF MULTY STOREYD PARKING BUILDING
B	Subject area as per instruction	:	Structural engineering
2	Details of Principal Investigator		
A	Name	:	Pramod K R
B	Qualification	:	B.E,M.Tech, (Ph.D)
C	Designation	:	Assistant Professor
D	Department	:	Civil
E	Years of teaching/research experience	:	8
F	Email ID	:	pramodkr@sapthagiri.edu.in
G	Cell Number	:	7829470474
H	Details of the Head of the Department		
I	Name of the Head of the Department	:	Mss. Suvarna P
J	Email ID	:	hodcivil@sapthagiri.edu.in
K	Cell Number	:	9035885409

  
Signature of the Investigator


  
Signature of Head of the Department

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

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

## B. DETAILS OF THE PROJECT PROPOSAL

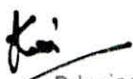
1.	Title of the Project Proposal	:	ANALYSIS AND DESIGN OF MULTI STOREY PARKING BUILDING
3.	Objectives of the proposal (Not more than six points)	:	<p>1. To propose a multi storeyed building near Jalahalli cross. As space, congestion on streets may arise. To overcome this problem we are suggesting to provide the parking complex.</p> <p>2. To reduce the parking area by providing multi-storeyed parking building. multi-storey car parks are located where land costs are so high, e.g. in or about the central areas of large towns, that it is more economical to build vertical facilities rather than purchase additional land for surface parking.</p> <p>3. To provide the safety and secured environment for the parked vehicles. The facility will provide a suitable parking environment for citizens and visitors to the commercial area.</p> <p>4. To reduce the traffic congestion.</p>
4.	Background of the project	:	<p>Now-a-days there is an increase in the number of vehicles on road. It is very easy to park vehicle on road or when vehicle are moving. But, when the vehicle stops, we cannot leave vehicle on road or unsafe place. For proper storage of vehicle when not in use "parking space" is needed. When the person has to stop on route for some purpose other than traffic related, the vehicle needs some halting facility, without disturbing traffic flow otherwise on the street. Such a facility is called parking. Due to increase in population there is increase in vehicle demand and we require more parking space thus in control by constructing multi-storeyed parking building. Parking building is used for safe-guarding the user vehicle. Successful parking structures meet the user demands. It includes feeling safe and also knowing that their</p>

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

26

		vehicles are in a secure environment. Where parking area is unplanned, there is a need to make an improvement in the parking area by constructing multi-storeyed parking building. Parking structures has been an important element in today's urban and suburban environments. Multi-storey parking will help in larger capacity parking. The parking floors, the ramp, the entrance and the exits should be well lighted by using solar panels.
5.	Methodology (Please include flow sheet, if required)	: 1. Investigate the area where parking congestion is high, study of SBC of the soil Planning for multi storey parking. 2. analysis and design of multi storey parking building using ETABS-2016 3. Estimation and costing of building.
6.	Milestones with time schedule & work plan	: Project started in Jan 2018 and ended in July 10, 2018
8.	List of equipment required for Phase-I & Phase-II for Project Implementation (as per the instruction Sl.No.27 under Annexure-II)	: ETABS -2016 Software Rs.2,80,000 apprx
9.	Relevance, importance & application of the project	: Reducing traffic by proving parking building at Jalahalli cross, Bengaluru.
10.	Novelty/Uniqueness of the project proposal	: Multi storey parking building.

  
(PRAMOD K.R.)

  
Principal  
Sapthagiri College of Engineering  
14/6, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560 057

  
Principal  
Sapthagiri College of Engineering  
14/6, Chikkasandra, Hesaraghatta Main Road  
Bengaluru - 560 057

  
HOD, Dept. of Civil Engg  
S.C.F, Bangalore-560 057

From,

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

Through: HOD

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	Pramod K R	Civil	Analysis And Design of Multi Storey Parking Building	2,80,000/-

Convener *Kari*

Copy To,

Principal

All Departments

IQAC

*Letter Received  
on 28/11/17*

*(PRAMOD K.R.)*

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

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

Date : 12/02/2018

To,

Principal,  
Sapthagiri College of Engineering  
Bangalore-560057

Through HOD

From,

Pramod K R  
Department of Civil engineering,  
Sapthagiri College of Engineering  
Bangalore-560057

Through HOD

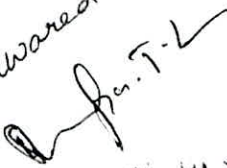
Sub: Procurement of Instruments Reg.,


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 equipment's/Instruments for the research project entitled "Analysis And Design of Multi Storey Parking Building" to carry out. Kindly considered and do the need full.

Thanking you,

Yours Faithfully,

  
(PRAMOD K.R.)

forwarded  
  
HOD, Dept. of Civil Engg.  
S.C.E, Bangalore-560 057

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

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

87

Date: 17/07/2018

To,

R and D

Sapthagiri College of Engineering

Bangalore-560057

Through HOD

From

Pramod K R,

Department of Civil 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 "Analysis and Design of Multi Storey Parking Building" and utilization certificate. This for your kind information, please.

Sl No	Particulars	Quantity	Amount	Remarks
1	ETABS Software	1	277300/-	Software purchased


Thanking You,

Copy,

Principal

  
HOD, Dept. of Civil Engg.  
S.C.E, Bangalore-560 057

  
(PRAMOD K. R.)

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

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

90

# TAX INVOICE

Sree Technologies  
# 479, 3rd 'A' Cross,  
2nd Block, 3rd Phase,  
Banashankari 3rd Stage,  
Bangalore - 560 085  
Email: info@sreetechnologies.com  
Phone No: 98456 99108  
GSTIN-29CGPPS8926J1ZA

Invoice No: 033  
Date: 16-03-2018  
Mode/Terms of Payment: 100% Against Delivery  
Other Ref:  
Buyer Order No: 5445(2):2018  
Ref Date: 03-03-2018  
Despatched Through: By Hand  
Destination: Bangalore

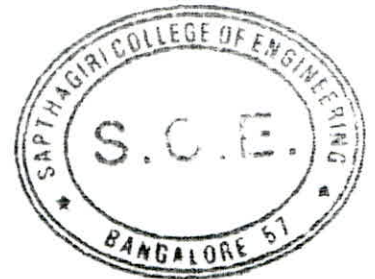
Buyer,  
Sapthagiri College Of Engineering  
14/5, Hesaraghatta Main Road,  
Chikkasandra  
Bengaluru, Karnataka 560057

Terms of Delivery  
2-3 Weeks

SI No	Description	Qty	Unit Price	Total Price
			Rs	Rs
1	ETABS Ultimate v-2016 user license for Education/Research (10 users)	1	235000.00	235000.00
	Total			235000.00
	CGST @ 9% on item			21150.00
	SGST @ 9% on item			21150.00
	Grand Total			2,77,300
				E. & O.E.

Amount chargeable in words

Indian Rupees Two Lakh SeventySeven Thousand Three Hundred Only



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

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

For Sree Technologies

Authorised Signatory

Declaration:

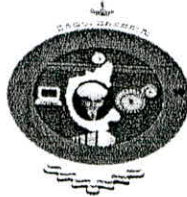
We declare that this invoice shows the actual price of the goods described and the particulars are true & correct.

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

91

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**BELAGAVI-590018 KARNATAKA**



**PROJECT ON**  
**" ANALYSIS AND DESIGN OF MULTI STOREYED PARKING**  
**BUILDING"**

Submitted in partial fulfillment of the requirements for the award of

**BACHELORE OF ENGINEERING**  
**IN**  
**CIVIL ENGINEERING**

Submitted by

**GAJENDRA D R**  
(USN: 1SG15CV404)

**PAWAN R**  
(USN: 1SG15CV413)

**PRAVEENKUMAR M B**  
(USN: 1SG15CV414)

**VENKATESH K**  
(USN: 1SG15CV419)

**Under the Guidance of**  
**Mr. PRAMOD K R.**

Assistant Professor  
Dept. of Civil Engineering  
Sce, Bangalore



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

**DEPARTMENT OF CIVIL ENGINEERING**  
**SAPTHAGIRI COLLEGE OF ENGINEERING**  
**BANGALORE-560057**

**2017-2018**

# SAPTHAGIRI COLLEGE OF ENGINEERING

Recognized by Govt. of Karnataka, Affiliated to VTU, Belagavi and Approved by AICTE, New Delhi)

**BANGALORE-560057 Karnataka**


**2017- 2018**

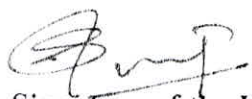
**DEPARTMENT OF CIVIL ENGINEERING**




## CERTIFICATE

This is to certify that the project work entitled "ANALYSIS AND DESIGN OF MULTI-STOREYED PARKING BUILDING" is carried out by Mr. PAWAN R, Mr. PRAVEENKUMAR M B, Mr. GAJENDRA D R and Mr. VENKATESH K a bonafide student of Sapthagiri college of Engineering in partial fulfillment for the award of **Bachelor of Engineering** of the Visvesvaraya Technological University, Belagavi during the year **2017-2018**. It is certified that all corrections and suggestions indicated for internal assessment have been incorporated in the report deposited in the department. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the said degree.

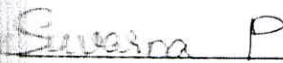
  
Signature of the Guide  
Mr. PRAMOD.K.R.  
Assistant Professor  
Dept. of Civil Engineering  
SCE, Bangalore

  
Signature of the HOD  
Mrs. SUVARNA.P  
Professor & Head  
Dept. of Civil Engineering  
SCE, Bangalore

  
Signature of the Principal  
Dr. K.L. SHIVABASAPPA  
Principal  
SCE, Bangalore

External Viva Voice

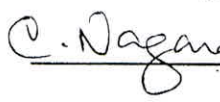
Name of the Examiners:

  
Suvarna P

  
C. Nagaraj

Signature with Date:

  
13/6/18

  
13/6/18

Principal  
Sapthagiri College of Engineering  
Chikkasandra, Hesarghatta (Rangoli)  
Bangalore-560 057

**UTILIZATION CERTIFICATE**

Sl No	Particulars	Quantity	Amount
1	ETABS software	1	2,77,300
		<b>Total</b>	<b>2,77,300</b>

Certified that Sapthagiri college of Engineering has provided partial financial support of **RS 2,77,300/-** (Two lakh seventy seven thousand three hundred only) towards Analysis And Design Of Multi-storeyed Parking Building Proposed At Jalahalli Cross project conducted by Civil 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**

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

## 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: 29/05/2017**

To,


The Principal,

Sapthagiri College of Engineering

Bangalore-560057

**Sub-** Sanction of Research grant for the research project "Study on Transient Stability on IEEE 14 Bus System using Mi-Power"

With reference to the letter dated 16/5/2017 regarding the research funding, the management of Sapthagiri college of engineering has sanctioned the Research grant of **Rs.4,75,000 (Rupees four lakh seventy five thousand only)** for the research project "Study on Transient Stability on IEEE 14 Bus System using Mi-Power" to be carried out by the department of Electrical and Electronics Engineering. The management always encourages research and it wishes the team success.



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

## 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: 30/05/2017**

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 Reg.,**

The management of Sapthagiri college of engineering has sanctioned the Research grant of **Rs.4,75,000 (Rupees four lakh seventy five thousand only)** for the research project "Study on Transient Stability on IEEE 14 Bus System using Mi-Power" to be carried out by the department of Electrical and Electronics Engineering.

Copy To,

All Departments

  
Principal

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

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

54

# Sapthagiri College of Engineering- Bangalore 57

Department of Electrical and Electronics Engineering

Date: 16-5-2017

To,

The Principal  
Sapthagiri College of Engineering  
Bangalore

Through HOD & RDECI

From

Mr. A. Dhamodaran  
Department of Electrical and Electronics Engineering,  
Sapthagiri College of Engineering

**Subject:** Request for financial assistance to carryout research Project.

With respect to above subject, a Project Proposal is being submitted herewith for the approval, for the academic year 2017-18. The project is on "Studies on Transient stability and enhancement of voltage profile on IEEE 14 bus system using MI-POWER" and a detailed proposal is being attached herewith. The research proposal and budget split-up has been enclosed herewith. It is hereby requested that the Research proposal may please be approved and the amount for the research may please be sanctioned.


Thanking Your

RDECI :

  
HOD /EEE

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

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

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


1

# RESEARCH PROPOSAL

## A. GENERAL INFORMATION

1	About the project		
A	Title of the project	:	Studies on Transient stability and enhancement of voltage profile on IEEE 14 bus system using MI-POWER
B	Subject area as per instruction	:	Power system
2	Details of Principal Investigator		
A	Name	:	Mr.A. Dhamodaran
B	Qualification	:	M.Tech in Electrical Power systems (Ph.D)
C	Designation	:	Assistant Professor
D	Department	:	Electrical and Electronics Engineering
E	Years of teaching/research experience	:	17
F	Email ID	:	adhamodaran@sapthagiri.edu.in
G	Cell Number	:	9620540352
H	Details of the Head of the Department		
I	Name of the Head of the Department	:	Dr. K.N. Ravi
J	Email ID	:	hodeee@sapthagiri.edu.in
K	Cell Number	:	9449940873

  
Signature of the Investigator

  
Signature of Head of the Department

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

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

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

## B. DETAILS OF THE PROJECT PROPOSAL

1.	Title of the Project Proposal	:	Studies on Transient stability and enhancement of voltage profile on IEEE 14 bus system using MI-POWER
3.	Objectives of the proposal	:	<ol style="list-style-type: none"> <li>1. To analyze the behavior of the synchronous machine in particular angular position of the rotor with respect to time after the fault occurs in the system</li> <li>2. To study the effect of the fault clearing time on the transient stability of an IEEE 14 bus system.</li> </ol>
4.	Background of the project	:	Transient instability has been the dominant stability problem on most systems and has been the focus of much of the industry's attention concerning system stability.
5.	Methodology (Please include flow sheet, if required)	:	An IEEE 14 bus test system is considered for the study of transient stability. The transmission line data, generator data, bus data, transformer tap setting data and shunt capacitor data of the IEEE 14 bus test system are also taken into consideration. A load flow study on the IEEE 14 bus system is to be carried out. Transient stability study is to be carried out using MI POWER software to determine the rotor angle. With the help of these values, the swing curve is to be plotted. The machine stability are to be stated from this
6.	Milestones with time schedule & work plan	:	<ol style="list-style-type: none"> <li>1) Transient stability study 3 months(Aug 2017 – Feb 2018)</li> <li>2) Enhancement of voltage profile 3 months (May 2018-July 2018)</li> </ol>
8.	List of equipment required in phases ( If Any)		Up gradation of MI-POWER software Rs.4,75,000 apprx

9.	Relevance, importance & application of the project	:	The transient stability analysis gives the necessary information required for the power system operator to take remedial actions at the occurrence of a fault before any part of the system is damaged.
10.	Novelty/Uniqueness of the project proposal	:	It helps in the design of equipment's which will satisfactorily operate even after a fault.

  
Principal Investigator

  
HOD

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

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

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

# Sapthagiri College of Engineering- Bangalore 57

## Department of Electrical and Electronics Engineering

**Subject:** Sanction of the fund for the Research Project.

2- 6-2017

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

Sl. No	Principal Investigator	Department	Project entitled	Amount Sanctioned
1	Mr. A. Dhamodaran	EEE	Studies on Transient stability and enhancement of voltage profile on IEEE 14 bus system using MI-POWER	4,74,750/-

  
**Convener**

**PROF & HOD**

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

Copy To,  
Principal

HODs of All Departments

IQAC

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



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

To,

15/06/2017

**Principal,**

Sapthagiri College of Engineering

Bangalore-560057

Through HOD



**Subject:** Request for Project approval and sanction of fund for the Project.

Sub: Procurement of Instruments Reg..

With reference to the letter received from R& D committee regarding approval of research project, we hereby request you to kindly sanction the procurement of the following equipments/Instruments for the research project entitled "Studies on Transient stability and enhancement of voltage profile on IEEE 14 bus system using MI-POWER". Kindly consider this favorably and please do the need full.

Thanking you,

Yours Faithfully,

  
(A. Shanmugan)

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



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

To,

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

Through HOD

From

Mr. Dhamdaran  
Department of Electrical and Electronic Engg  
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 "Transient stability and enhancement of voltage profile on IEEE 14 bus system using MI-POWER" and utilization certificate. This for your kind information, please.

  
HOD/EEE

  
(A. Dhamdaran)

  
PRINCIPAL

The MI-POWER software worth of Rs. 474750/- procured (Invoice number...24112) is being utilized for research project Studies on Transient stability and enhancement of voltage profile on IEEE 14 bus system.

Copy,

Principal

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

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



**POWER RESEARCH & DEVELOPMENT  
CONSULTANTS PRIVATE LIMITED,**

# 5, 11th Cross, 2nd Stage, West of Chord Road, Bangalore - 560 086

Tel : +91-80-23192159, 23192168, 23192209 Fax: 23192210

E-mail : prdc@vsnl.com

KST : 71628873

CST : 71678876 dtd 6-5-95

Employee's Provident Fund Code No.KN/BN/19905

SERVICE TAX Regn. No.: AABCP3291JST001

IEC N.: 0703013891

PERMANENT A/c No. : AABCP3291J

TIN No: 29340028246 Dtd:01.04.2003

**TAX INVOICE**

INVOICE NO: 24112

DATE: 29.06.2017

SECOND COPY

**Sapthagiri College of Engineering**

14/5, Chikkasandra, Hesaraghatta Main Road  
Bangalore - 560090

P.O. NUMBER	P.O.DATE	D.C. NO.	D.C.DATE	NATURE OF JOB
SSECT:HO:GNH:1245:SH:SCE:INW:104 0:2017	28.06.2017	.....	.....	SOFTWARE SUPPLY

SL.NO.	DESCRIPTION	QTY	UNIT PRICE	AMOUNT IN INR
1	SOFTWARE SUPPLY	.....	.....	4,50,000.00
NARRATION :				
1. Supply of MiPower Software (Up-gradation of existing 10 users to latest version and Additional 10 users license with the latest version)				SUBTOTAL 4,50,000.00
2. 100% of the order value (Rs.4,50,000/-) after Installation and Training				VAT @ 5.5% 24,750.00
3. Vat at 5.5 % extra				TOTAL 4,74,750.00

Words: (Rupees Four Lakh Seventy Four Thousand Seven Hundred Fifty Only)

**TERMS :**

1. Make all DDs payable to : Power Research & Development Consultants Private Limited, Bangalore.
2. 24% Interest is applicable if the bill is not cleared within 15 days.

**Our Bank Account Details**

**IFSC CODE:**

Beneficiary's Bank:

Beneficiary's Account Number:

Beneficiary's Account Name

Beneficiary's Address

CNRB0000886

Canara Bank, Mahalakshmi Layout branch, Bangalore - 86

0886261010300

Power Research & Development Consultants Pvt. Ltd.

#5, 11th Cross, West of Chord Road, II Stage,

Bangalore - 560086, Karnataka, INDIA

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

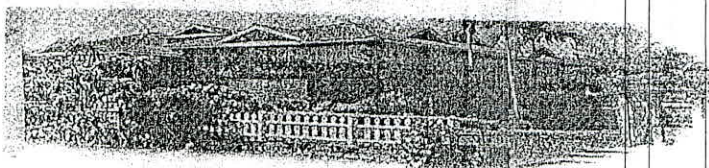
*for*  
*(28-09-17)*  
**Principal**  
**Sapthagiri College of Engineering**  
14/5, Chikkasandra, Hesaraghatta R.  
Bangalore - 560 057

Prepared by

Checked by

for POWER RESEARCH & DEVELOPMENT  
CONSULTANTS PVT.LTD.





PURCHASE ORDER							
SUPPLIER REF NO:PRDC/2017-2018/SCE/64				NO: SSECT-HO:GNH:1245/SCE:INW:1040:2017			
Mail Dt : June 27, 2017				DATE: 28.06.2017			
SUPPLIER				BILLING and DESPATCH TO:			
Power Reserch & Development Consultants Private Limited				Sapthagiri College of Engineering			
#5,11th Cross							
2nd Stage,							
West of Chord Road				15, Chikkasandra,			
Bangalore-560058				Hesaraghatta Main Road,			
Contact Person : Mr.Nitish Kumar/Venkatesh				BANGALORE - 560090 INDIA			
MB:+91 95352 53557/9845009162/080-23192210				Contact Person : Mr.Principal			
We are pleased to place the confirmed order for supply of the following:				28392801			
SI	DESCRIPTION	No of User License	QTY	UNIT RATE	Rate of Tax	Tax Amount	TOTAL AMOUNT
1	MiPower 9.1 Version Software Basic Package						
	(i) Up-gradation of existing 10 users to the latest version	10					
	(ii) Additional 10 users license with the latest version	10	20	450000.00	5.50%	24750.00	474750.00
	MiPower*Modules						
	(a) GraphicalUserInterfaces	(d) PowerTRS-TransientStabilityStudy					
	PowerSystemNetworkEditor	Unlimiteddisturbances					
	FACTSDevices	MotorStartInanalysis					
	DatabaseManager	UserdefinedControlssystem(AVR,SVC,H VDC,ULTC)					
	BatchModelInterface	IEEEPSS					
	MultiGraphPlotter	Text+Graphicaloutputs					
	AutoCADInterface	(e) Renewables					
	AutoCADInterface	PVModelling					
	AutomaticSingleLineDiagramGenerator	WindModellingwith4differenttypesofWind					
	ReportGenerator	bines(WT1,WT2,WT3,WT4)					
	(b) PowerLFA-LoadFlowAnalysis	(f) MiPowerTools					
	Newton-Raphsonoption	Line/CableParameterCalculation					
	Fast-DeCoupledoption	ABCDParameterCalculation					
	Gauss-Seidelmethodoption	EconomicDespatch					
	Frequencydependentloadflow	YBus&ZBusFormation					
	Contingencyranking	SingleArea/MultiAreaLFC					
	EconomicDispatch	PowerAngleCurve					
	PresentWorthComputation	ReceivingEndPowerCircleDiagram					
	Real&Reactivepoweroptimization	InductionMotorCircleDiagram					
	CustomReports	CriticalClearingTime					
	(c) PowerSCS-Short-CircuitStudy	UnitCommitment					
	Multi-case/Multilandings/	TransformerSizing					
	Multigenerationversion	HydroThermalCoordination					
	Motorcontribution						
	EarthingandZigzagtransformer						
	ReactorSizing						
	Loop&Radialsystems						
	Travellingshuntfault						
	CustomReports						
Rupees: Four lakh seventy four thousand seven hundred fifty only			Grand Total				474750.00

FOR SAPTHAGIRI COLLEGE OF ENGINEERING

Authorised Signatory

#### TERMS AND CONDITIONS

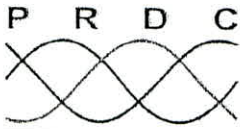
- 1 Please mention PO No & Indent No in your Invoice
  - 2 Delivery : Immediate
  - 3 Payment: 100% after Installation and Training and also subject to receipt of required satisfactory work completion report from our Engg College concerned
  - 4 Soft copy of the Software should be given. In the form of DVD/Pendrive
  - 5 Rates are also inclusive of all Taxes. Further No Additional charges for packaging/handling/forwarding/installation
  - 6 FREE training be given for all EEE staff for 3 days at our College premisls. This training should also be provided at free of cost in case if it required at a later date
  - 7 Warranty: This offer covers 1 Year free warranty. Under free warranty support period, technical support can be provided over phone/fax/email on all working days of MiPower. Minor softwareupdates & bug fixes are to be supplied on CD media by courier absolutely free of cost
  - 8 Other Terms and Conditions as detailed in your quote referred above
- CC 1) EEE Dept, Engg College to to verify, follow up and confirm the receipt of the Software and installation as per this PO through mail to the office
- 2) Verify and Certify the bills and send the bills in original to HO with due certification as per this PO conditions for arranging payment as per the FORMAT

*Kari*  
Principal  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta  
Bangalore-560058

Principal  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesaraghatta Road  
Bangalore-560058

PRDC COPY

## POWER RESEARCH &amp; DEVELOPMENT CONSULTANTS PVT. LTD



विज्ञानेन ज्ञातानि जीवन्ति

#5, 11<sup>th</sup> Cross, 2<sup>nd</sup> Stage, West of Chord Road, Bangalore-86.  
Corporate Identity Number (CIN) : U72200KA1994PTC015487  
Ph No: +91-80- 23192159//23192209; Fax: +91-80-23192210  
E-mail : prdc@vsnl.com; www.prdcinfotech.com

KST :71628873

CST :71678876

dtd 6-5-95

DELIVERY CHALLAN

NO: 2017-2018/13

DATE: June 29' 2017

PURCHASER'S NAME & ADDRESS		SUPPLIER'S ADDRESS	
<b>To</b> <b>Sapthagiri College Of Engineering</b> 14/5, Chikkasandra, Hesaraghatta Main Road Bangalore – 560057 Karnataka Phone: 080-28372801,28372802,28372803 Kind Attn.: Dr. K. N. Ravi HOD Of Electrical & Electronics Engineering		<b>Power Research &amp; Development Consultants Pvt. Lt</b> #5, 11 <sup>th</sup> Cross, 2 <sup>nd</sup> Stage, WOC Road Bangalore - 560 086, INDIA Ph No: +91-80- 23192159//23192209 Fax: +91-80-23192210 Email: prdc@vsnl.com	
PO. No : SSECT:HO:GNH:1245:SH:SCE:INW :1040:2017	Dtd: 28.06.2017	Invoice/Credit Bill No.: 24112	Date: 29-06-2017

SL.NO.	ITEM DESCRIPTION	QTY IN NOS.	REMARKS
I	MiPower Software User Manuals		
	1. Load Flow Analysis	01	✓
	2. Short Circuit Study	01	✓
	3. Transient Stability	01	✓
	4. Free Programmable Blocks	01	✓
	5. Relay Coordination	00	
	6. Line & Cable Parameter Calculation	01	✓
	7. Dynamic Stability	00	
	8. Voltage Instability Analysis	00	
	9. Network Reduction	00	
	10. Harmonic Analysis	00	
	11. Long Term Demand Forecast	00	
	12. Sub Synchronous Resonance	00	
	13. Electro Magnetic Transient Analysis	00	
	14. Three Phase Load Flow Analysis	00	
	15. Ground Mat Design	00	
	16. Technical document	01	✓
	17. User Interface	01	✓
	18. VTU Blue Book	01	✓
	19. How to solve manuals	05	✓
II	Installation Manual	01	✓
III	CD No. – MiPower- 9169-20	01	✓
IV	USB- Network Lock No.: 3974 - 4153	01	✓
V	Authenticity Certificate	01	✓
VI	Universal Lock Secure Box No.:	00	
TOTAL:		17	

SHIP MODE: ✓ HAND DELIVERY / COURIER / REG. POST

NOTE: Only ticked items are applicable.

\*Kindly return back the existing Network lock Nos. 3974-0946 in lieu of new Network lock No. 3974 - 4153

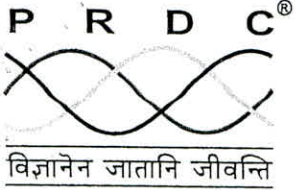
for POWER RESEARCH &amp; DEVELOPMENT CONSULTANTS PVT. LTD.

Received by (Signature with Seal)  
**Professor & HOD**  
**Department of Electrical & Electronics Engineering**  
**Sapthagiri College of Engineering**  
**BANGALORE - 560 057**

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

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

items  
 subject to  
 operation work  
 one



## Power Research & Development Consultants Private Limited

#5, 11<sup>th</sup> Cross, 2<sup>nd</sup> Stage, West of Chord Road, Bengaluru -560086, INDIA  
Corporate Identity Number (CIN) : U72200KA1994PTC015487  
Phone: +91 - 80 - 4245-5555 / 2319-2209 / 2319-2159 / 6715-6100  
Fax: +91 - 80 - 4245-5556 / 2319-2210  
E-mail: prdc@vsnl.com Website: www.prdcinfotech.com

Ref: PRDC/2017-2018/SCE/482

H. R. Venkatesh  
General Manager – B.D

June 29, 2017

To

Sapthagiri College Of Engineering  
14/5, Chikkasandra,  
Hesaraghatta Main Road  
Bangalore – 560057 Karnataka  
Phone: 080-28372801, 28372802, 28372803  
Fax: +91-80-28372797

Kind Attn.: Dr. K. N. Ravi - HOD Of Electrical & Electronics Engineering

Dear Sir,

**Sub:–** Supply of MiPower® Software to EEE Dept.

**Ref:** PO No: SECT:HO:GNH:1245:SH:SCE:INW:1040:2017 dated 28.06.2017

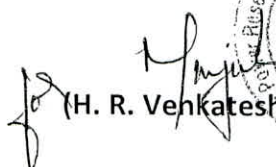

With reference to the above, we thank you for placing the order on us. Please find herewith enclosed following:


1. MiPower® Software package version – 9.1, C.D. No. 9169-20 – 1 No.
2. USB Network Hardware Lock for Twenty users licence (No. 3974 - 4153) – 1 No.  
(Kindly return back the existing Network lock Nos. 3974-0946 in lieu of new Network lock No. 3974 – 4153)
3. MiPower® user manuals – 1 set
4. Delivery Challan in Duplicate (Kindly return the Delivery Challan super scribed as 'PRDC Copy' duly signed with seal and date as a token of receipt)
5. Authenticity Certificate.
6. Invoice No.24112 dated: 29-06-2017 for an amount of Rs.4,74,750/- (Rupees Four Lakh Seventy Four Thousand Seven Hundred and Fifty only) in Duplicate

Please feel free to contact the undersigned if you have any questions / clarification.

Thanking you again and assuring you of our prompt attention always,

Yours Faithfully,

  
(H. R. Venkatesh)  


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

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

# CLIENTS' COPY

## POWER RESEARCH & DEVELOPMENT CONSULTANTS PVT. LTD

P R D C



#5, 11<sup>th</sup> Cross, 2<sup>nd</sup> Stage, West of Chord Road, Bangalore-86,  
Corporate Identity Number (CIN) : U72200KA1994PTC015487  
Ph No: +91-80- 23192159//23192209; Fax: +91-80-23192210  
E-mail : prdc@vsnl.com; www.prdcinfotech.com

KST :71628873

CST :71678876

dtd 6-5-95

### DELIVERY CHALLAN

NO: 2017-2018/13

DATE: June 29' 2017

PURCHASER'S NAME & ADDRESS		SUPPLIER'S ADDRESS	
<b>To</b> <b>Sapthagiri College Of Engineering</b> 14/5, Chikkasandra, Hesaraghatta Main Road Bangalore - 560057 Karnataka Phone: 080-28372801,28372802,28372803 Kind Attn.: Dr. K. N. Ravi HOD Of Electrical & Electronics Engineering		<b>Power Research &amp; Development Consultants Pvt. Ltd.</b> #5, 11 <sup>th</sup> Cross, 2 <sup>nd</sup> Stage, WOC Road Bangalore - 560 086. INDIA Ph No: +91-80- 23192159//23192209 Fax: +91-80-23192210 Email: prdc@vsnl.com	
PO. No : SSECT:HO:GNH:1245:SH:SCE:INW :1040:2017	Dtd: 28.06.2017	Invoice/Credit Bill No.: 24112	Date: 29-06-2017

SL.NO.	ITEM DESCRIPTION	QTY IN NOS.	REMARKS
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	2. Short Circuit Study	01	
	3. Transient Stability	01	
	4. Free Programmable Blocks	01	
	5. Relay Coordination	00	
	6. Line & Cable Parameter Calculation	01	
	7. Dynamic Stability	00	
	8. Voltage Instability Analysis	00	
	9. Network Reduction	00	
	10. Harmonic Analysis	00	
	11. Long Term Demand Forecast	00	
	12. Sub Synchronous Resonance	00	
	13. Electro Magnetic Transient Analysis	00	
	14. Three Phase Load Flow Analysis	00	
	15. Ground Mat Design	00	
	16. Technical document	01	
	17. User Interface	01	
	18. VTU Blue Book	01	
	19. How to solve manuals	05	
II	Installation Manual	01	
III	CD No. - MiPower- 9169-20	01	
IV	USB- Network Lock No.: 3974 - 4153	01	
V	Authenticity Certificate	01	
VI	Universal Lock Secure Box No.:	00	
TOTAL:		17	

SHIP MODE: ✓HAND DELIVERY / COURIER / REG. POST

NOTE: Only ticked items are applicable.

\*Kindly return back the existing Network lock Nos. 3974-0946 in lieu of new Network lock No. 3974 - 4153

for POWER RESEARCH & DEVELOPMENT CONSULTANTS PVT. LTD.

Received by (Signature with Seal):

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

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

# SAPTHAGIRI COLLEGE OF ENGINEERING, Hessarghatta Main Road, Bangalore

## Vendor Bill Payment Slip

Slip Dt

Date: 28-6-17

HO PO No: S SECT: HO: GNH: 1245: SA: SCE: INW: 10402017

Vendor Name: H/S. POWER RESEARCH & DEVELOPMENT CONSULTANTS PRIVATE LIMITED

1) Vendor Bill No:	24112	Date	29-6-17	Amount	4,74,750
2) Vendor Bill No:		Date		Amount	
3) Vendor Bill No:		Date		Amount	
4) Vendor Bill No:		Date		Amount	
5) Vendor Bill No:		Date		Amount	
Total Bill Amount				Rs	-

Rupees in words: Rs. Four Lakhs Seventy four thousand and Seven hundred and Fifty only

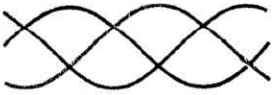
Stock Reg Ref:	Dept	Page No	SI
	Dept	Page No	SI
	Dept	Page No	SI

"Certified that the items mentioned in the above referred bills have been accounted in the Stock Ledger and it is as per the HO PO terms. The Equipment/Items installed/working satisfactorily and recommended for payment as per PO terms"

Stores in charge	HOD	HOD	HOD
Auditor	Accounts	Director	Principal
			Chairman

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

P R D C®



विज्ञानेन जातानि जीवन्ति

## Power Research & Development Consultants Private Limited

#5, 11<sup>th</sup> Cross, 2<sup>nd</sup> Stage, West of Chord Road, Bengaluru - 560086, INDIA

Corporate Identity Number (CIN): U72200KA1994PTC015487

Phone: +91 - 80 - 4245-5555 / 2319-2209 / 2319-2159 / 6715-6100

Fax: +91 - 80 - 4245-5556 / 2319-2210

Website: [www.prdcinfotech.com](http://www.prdcinfotech.com)

# MiPower Installation Certificate

This is to certify that **MiPower® Ver.9.1** – Power system analysis package has been successfully installed at **Sapthagiri College of Engineering, Bangalore, Karnataka** on **20<sup>th</sup> September 2017**.

No. of MiPower installations: 20

Installed system details: Intel Core i3 - 3.9 GHz  
4GB RAM  
64 bit OS  
1TB HDD

for Sapthagiri College of Engineering, Bangalore, Karnataka (Name, Seal & Signature)

Date : 22/09/17

*[Signature]*

Professor & HOD  
Department of Electrical &  
Electronics Engineering  
Sapthagiri College of Engineering  
BANGALORE - 560 057

for PRDC, BANGALORE (Seal & Signature)

DATE: 20/9/17

*[Signature]*

BASIL M.T.



*[Signature]*

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

*[Signature]*

Principal  
Sapthagiri College of Engineering  
14/5, Chikkasandra, Hesarghatta  
Bangalore - 560 057

# Training Completion Certificate

This is to certify that ~~3~~ <sup>3</sup> days training on MiPower® Ver. 9.1 – Power System Analysis Package has been held at Sathagiri College of Engineering, Bangalore, Karnataka from 20<sup>th</sup> Sept 2017 to 22<sup>nd</sup> Sept 2017. All the modules were thoroughly explained during training period.

for Sathagiri College of Engineering, Bangalore, Karnataka (Seal & Signature)

for PRDC, BANGALORE (Name, Seal & Signature)

BASIL MT

Training period: ~~3~~ <sup>3</sup> days.



List of Participants:

1. Mr. A. Dharmo dasan 6.
2. Mr. Mahanishnu. K. B.P. 7.
3. Mr. Shirasgi. A. 8.
4. Mrs. Nandini D.B. 9.
5. 10.

Professor & HOD  
Department of Electrical &  
Electronics Engineering  
Sathagiri College of Engineering  
BANGALORE - 560 057

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

VISVESVARAYA TECHNOLOGICAL UNIVERSITY  
JNANASANGAMA, BELGAUM-590018



18

**PROJECT REPORT ON**  
**"TRANSIENT STABILITY STUDY ON IEEE 14 BUS SYSTEM**  
**USING MI-POWER"**

*Submitted in the partial fulfilment for the award of the degree of*  
**BACHELOR OF ENGINEERING**  
**IN**  
**ELECTRICAL AND ELECTRONICS**

*Submitted by*

**BLESSY PHILIP M**

**ISG14EE022**

**DIVYA M**

**ISG14EE026**

**ISHANI SHARMA**

**ISG14EE031**

**KAVYA J R**

**ISG14EE034**

*Under the supervision of*

**Mr. A DHAMODARAN**  
Asst. Prof. of EEE

**Dr. K N RAVI**  
Prof. & HOD of EEE

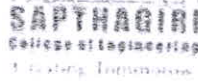


**Principal**  
**Sapthagiri College of Engineering**  
Chikkasandra, Hesaraghatta Road,  
Bangalore-560 057

**For the academic year of 2017-18**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS**  
**ENGINEERING**

**SAPTHAGIRI COLLEGE OF ENGINEERING**  
No. 14 & Chikkasandra, Hesaraghatta Main Road, Bangalore-560057

24



Department of  
ELECTRICAL AND ELECTRONICS ENGINEERING

CERTIFICATE

Certified that the project work entitled "TRANSIENT STABILITY STUDY ON IEEE 14 BUS SYSTEM USING MI-POWER" is carried out by BLESSY PHILIP M bearing USN [ISG14EE022], DIVYA M bearing USN [ISG14EE026], ISHANI SHARMA bearing USN [ISG14EE031], KAVYA J R bearing USN [ISG14EE034], bonafide students of Sapthagiri College Of Engineering in partial fulfilment 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 deemed as it satisfies the academic requirements in respect of project work prescribed for Bachelor of Engineering Degree.

Signature of the HOD

Dr. K N Ravi

In-charge & H.O.D

Signature of the Principal

Dr. K L Shivabasappa

Principal

Principal

Sapthagiri College of Engineering  
Chikkasandra, Hesaraaghatta Road,  
Bangalore-560 057

with date

### UTILIZATION CERTIFICATE

Sl No	Particulars	Quantity	Amount
1	Mi- Power 9.1 version software	1	4,74,750
2	Miscellaneous		250
	<b>Total</b>		<b>4,75,000</b>

Certified that Sapthagiri college of Engineering has provided partial financial support of **RS 4,75,000/-** (Four lakh seventy five thousand only) towards Studies On Transient Stability and enhancement of voltage profile on IEEE 14 Bus System Using Mi-Power 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**

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

**Signature of Auditor with seal**



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

## 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: 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"**

With reference to the letter dated 19/10/2017 regarding the research funding, 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. This project is relevant to the society and the management wishes the team success in its project.



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



**Executive Director**  
**Sri G.D. MANOJ**  
Executive Director  
Sapthagiri College of Engineering  
BENGALURU - 560 057.

## 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 (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 (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 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 (as per the instruction Sl.No.27 under Annexure-II)		Up gradation of MI-POWER software 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

*B*  
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 Mrs.Preetha.N.P	EEE	Solar powered LED Street light with auto 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

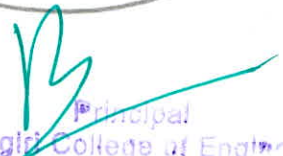
With reference above cited subjected I am hereby enclosing project report entitled Studies on "Solar powered LED Street light with auto intensity control" and utilization certificate. This for your kind information, please.

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, Hesaraghatta 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 12V 100AH	11,661	1	11,661
Battery Box	1,500	1	1,500
Clamps for fixing Battery and Connection cables	400		400
Taxes 18%			2,441
GRAND TOTAL			Rs. 16,002/-

In Words: Rupees sixteen thousand and two only

GSTN Number: 29AJHPB8411CIZL

Thank You

  
For Nirvana Foundation  
No. 925, AGB Layout,  
Hesaraghatta Road,  
BANGALORE-560 090.  
BANGALORE-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  
Bangalore-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

3-1-1-C original (20)

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

## KSCST PROJECTS

### UTILIZATION CERTIFICATE

**KSCST Student project program 41th series - 2017-18**


Sl No	Lettered NO and Date	Amount	Certified that KSCST has provided partial financial support of <b>RS 29,000/-</b> towards Biofuel and SPP student project program 38th series  Sum of Rs <b>29,000/-</b> only has been utilize for the purpose Biofuel and SPP student project program for which it was sanction
1	7.1.01/SPP/08	11000/-	
2	7.1.01/SPP/08	4500/-	
3	7.1.01/SPP/08	5000/-	
4	7.1.01/SPP/08	8500/-	

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

Kinds of check exercised

1. Cash book
2. Vouchers

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

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

Sl. No	Project proposal ref no	Title of the project	Dept./Guide	Amount Sanction by KSCST	Amount utilized by the college	Balance if any to be refunded to KSCST
1	41S_B_BE_062	Investigation on Performance and pollution level on n-butanol blended petrol fuelled IC engine (10% to 50% blending)	ME/ Prof. Raghuthama Rao	11000/-	11000/-	0
2	41S_B_BE_2016	Real time free parking slots tracking using IOT technology	ISE/ Prof. Prerana Chaitra	4500/-	4500/-	0
3	41S_B_BE_0470	Women Security System	EC/ Dr. Ashwatha Kumar S	5000/-	12,000	0
4	41S_B_BE_076	Design and Lab scale ultrasound batch reactor for the production of biodiesel from the slaughter waste	BT/ Prof. Kavya V M Prof. Shobha G Prof. Soumya C	8500/-	8,500/-	0

Signature of the Principal with seal

Date:

Signature of Auditor with seal

Date:

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

## KSCST PROJECTS

### UTILIZATION CERTIFICATE