

# **GREEN AUDIT REPORT**

**2020-2021**



**Bapatla Engineering College:: Bapatla  
(Autonomous)**

**Bapatla, Guntur, Andhra Pradesh**

**Accredited by NAAC**

## ***Green Audit Assessment Team***



***K.Siva Naga Prasad, Lead Auditor  
EMS/EnMS***



***K.V.Murthy,Lead Auditor EMS/EnMS***



***Ch.Rama Rao,Lead Auditor EMS/EnMS***

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# **INTRODUCTION**

## **INTRODUCTION**

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyze environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. Green audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. If self-enquiry is a natural and necessary outgrowth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric CO<sub>2</sub> from the environment. The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

# **OBJECTIVES**

## **OBJECTIVES**

In recent time, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green audit are:

- To map the geographical location of the institution.
- To document the floral and faunal diversity of the college.
- To record the meteorological parameter of BEC where college is situated.
- To document the ambient environmental condition of weather, air, water and noise of the college.
- To document the waste disposal system.
- To estimate the Energy requirements of the college.
- To report the expenditure on green initiatives during the last five years.

# **METHODOLOGY**

## **METHODOLOGY**

The purpose of the green audit of BEC is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes: collection of data, physical inspection of the campus, observation and review of the documentation and data analysis.

# **ABOUT THE COLLEGE**

## **ABOUT THE COLLEGE**

**The Bapatla Engineering College(Autonomous)**, one of the seven educational institutions sponsored by the Bapatla Education Society, was established in 1981 with a vision to impart quality technical education and is affiliated to Acharya Nagarjuna University. The College is a little away from the din and bustle of Bapatla, a town with a historic and hoary past, about 75 Km. south of Vijayawada on Chennai-Vijayawada rail route. The college offers B.Tech. Programmes in 9 branches of Engineering- Civil, Computer Science, Electronics and Communications, Electrical and Electronics and Mechanical Engineering which are thrice NBA accredited, Electronics and Instrumentation Engineering which are accredited twice and Information Technology which is accredited once.

### **Programmes offered by the institution**

<b>Programme Code</b>	<b>Programme Name</b>
BT01	B.Tech-Civil Engineering
BT02	B.Tech-Computer science and Engineering
BT03	B.Tech-Electronics and Communication Engineering
BT04	B.Tech-Electrical and Electronics Engineering
BT05	B.Tech-Electronics and Instrumentation Engineering
BT06	B.Tech-Information Technology
BT07	B.Tech-Mechanical Engineering
BT08	B.Tech - Cyber Security
BT09	B.Tech - Data Science
MT01	M.Tech-SE
MT02	M.Tech-CSE
MT03	M.Tech CESP
MT04	M.Tech-PS
MT05	M.Tech-CAD/CAM
MCA01	MCA
MSC02	PG-CS
MSC03	PG-MA
MSC04	PG-CHO
MSC06	PG-CHA
MSC05	PG-PH
DE01	<b>DCE</b>
DE02	<b>DECE</b>
DE03	<b>DEEE</b>
DE04	<b>DME</b>

# **VISION AND MISSION STATEMENT**

## **Vision**

- To build centers of excellence, impart high quality education and instill high standards of ethics and professionalism through strategic efforts of our dedicated staff, which allows the college to effectively adapt to the ever changing aspects of education.
- To empower the faculty and students with the knowledge, skills and innovative thinking to facilitate discovery in numerous existing and yet to be discovered fields of engineering, technology and interdisciplinary endeavors.

## **Mission**

- Our Mission is to impart the quality education at par with global standards to the students from all over India and in particular those from the local and rural areas.
- We continuously try to maintain high standards so as to make them technologically competent and ethically strong individuals who shall be able to improve the quality of life and economy of our country.

# **GREEN AUDITING**

## **GREEN AUDITING**

Bapatla Engineering College has been taken several initiatives to transform the college as “Green Campus” and adopted the ‘Green Campus’ system for environmental conservation in order to achieve environmental sustainability. The institute has initiated and planted variety of plant species to encourage and enhance the Biodiversity aspect of the campus. Due the Green initiative adopted by the institute, the campus temperatures were reduced and contributes on the adverse impacts of Global warming. The Students are enable to pursue their technical higher education comfortably at Green Campus and eco-friendly study environment. Rainwater harvesting system was implemented to meet the needs for plantation.



The solid waste will be collected from all the sources such as from Kitchen, bathrooms inside the hostels which includes papers, plastics, foods, metals, glass etc. and it will be segregated from source of generation. The administrative supervisor in each block ensures that the waste in each floor is collected at designated time intervals. The block workers in each floor collect, clean, segregate and compile the waste in the dustbins provided at each floor. The floor dustbins are emptied in movable containers provided for each block and is taken to the dumping yard provided by the college. The college has contacted an authorized vendor who collects the waste from the designated place, segregates them, recycles them and disposes them at the landfills authorized by the government. For drinking, mineral water

facility is arranged in every building of the campus. Wastage of drinking water is restricted through proper monitoring. Waste water is properly drained out to maintain the greenery in the campus as well as providing ecologically aesthetic environment. Proper drainage system is arranged for all the buildings of the campus. The campus is a zero water discharge campus, which means that no water is discharged outside the campus and all the water is treated and recycled for reuse for horticultural activities. Awareness towards minimizing the wastage of water is spread at regular intervals among the students

The college was located in 30 acres of land area. There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO<sub>2</sub> emission, energy and water use, while creating atmosphere where students can learn and be healthy.

**LAND USE  
ANALYSIS  
OF BEC**

## **LAND USE ANALYSIS, BEC**

### ***GENERAL OVERVIEW OF THE CONCEPT OF LAND USE***

Land use refers to man's activities and the various uses which are carried on and derived from land. Viewing the earth from space, it is now very crucial in man's activities on natural resource. In situations of rapid changes in land use, observations of the Earth from space give the information of human activities and utilization of the landscape.

Remote sensing GIS techniques are now providing new tools for advanced land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of earth system, functions, patterning and change in the local, regional as well as at global scales over time. Satellite imagery particularly is a valuable tool for generating land use map.

### **METHODOLOGY ADOPTED FOR LAND USE MAPPING**

Three types of data that are GPS points, field survey data and Google earth data for geo referencing have been used in this study.

### **DATA PROCESSING AND ANALYSIS**

Land use map preparation is executed through the following steps:

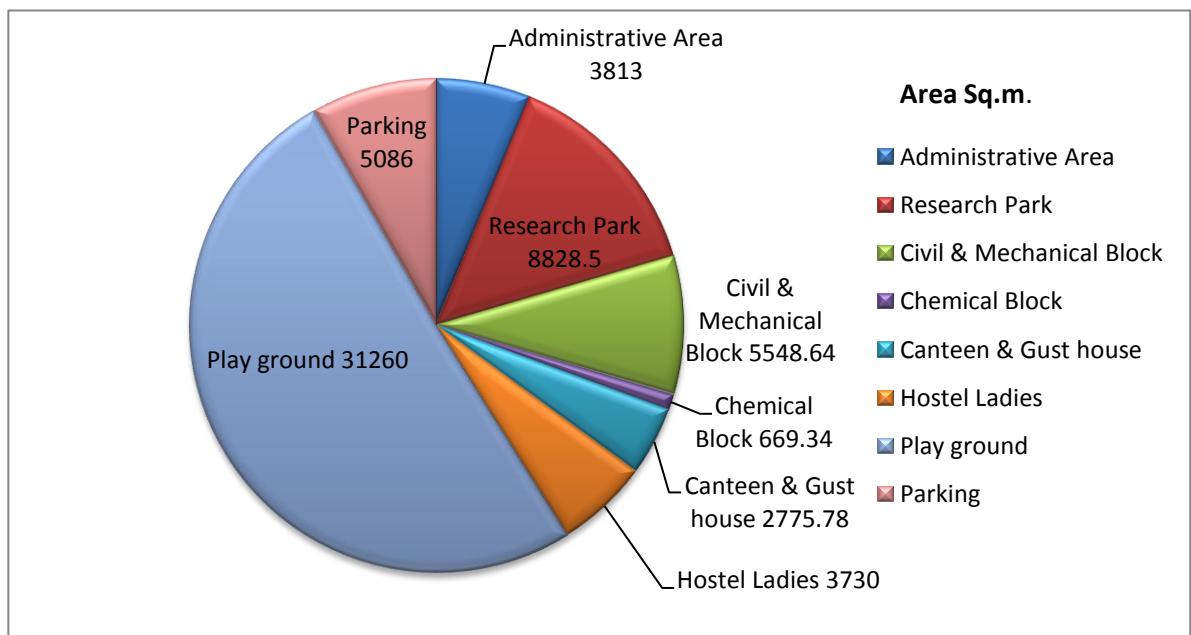
Acquisition of data (latitude and longitudinal data) Geo-coding and Geo referencing of satellite imageries by extracting the ground control points. Supervised classification was carried out with the aid of ground truth data collected during field survey. Scanning and digitization of maps and editing of all the Geo referenced maps were done using GIS. Data manipulation and analysis and linking the spatial data with the attribute data for creation of topology was carried out using GIS software. Creation of GIS output in the form of land use map showing various land usage have also been prepared.

Therefore, attempt has been made in this study to map land use for BEC with a view to detect the land consumption in the built-up land area using both remote sensing and GIS techniques.

**Green Audit Report, BEC - 2021**  
**LAND USE DATA OF BEC, Bapatla**

CATEGORIES OF LAND USE	AREA(Sq.m)
<b>Administrative Area</b>	<b>3813</b>
<b>Research Park</b>	<b>8828.5</b>
<b>Civil &amp; Mechanical Block</b>	<b>5548.64</b>
<b>Chemical Block</b>	<b>669.34</b>
<b>Canteen &amp; Guest house</b>	<b>2775.78</b>
<b>Hostel L</b>	<b>3730</b>
<b>Play ground</b>	<b>31260</b>
<b>Parking</b>	<b>5086</b>
<b>GRAND TOTAL</b>	<b>121760</b>

**LAND USE ANALYSIS, Bapatla Engineering College, Bapatla, Guntur**



**LAND USE (BUILT UP AREA) ANALYSIS**

The built up area of 41..85% (i.e 25365.26 m<sup>2</sup>) consists of the following regions as stated below for land consumption in buildup area for Bapatla Engineering College.

**FINDINGS**

BEC, which was established in the year 1981, has an eco-friendly environment. It has a long legacy of healthy environmental practices including periodic plantation, their preservation and maintenance. Its land use is such that about 75% of the total area is occupied by open land and plantation that generates a better and sustainable campus environment.

**Area occupied by various buildings of BEC : Details of Instructional Area.**

Department	Particulars	Number of Rooms	L x B of the room in m	Total Carpet area (sq.m)
<b>CLASS ROOMS</b>				
Chemical Engineering	CHL1	3	7.5 X 8.8	66
	CHL3		7.5 X 8.8	66
	CHL2		12 X 7.5	90
Civil Engineering	CMB17	7	16.9 X 6.6	112
	CMB26		10 X 7.09	71
	CMB27		9.8 X 6.63	64.8
	CMB28		8.8 X 7.05	62.1
	CMB29		8.8 X 7.05	62.1
	H12		8.9 X 8.75	78.1
	H12A		8.7 X 8.75	76.2
Mechanical Engineering	CMB21	7	9.1 X 7.05	64.2
	CMB22		11.9 X 7.05	83.7
	CMB23		8.7 X 7.05	61.6
	CMB24		9.6 X 7.05	67.5
	CMB25A		7.1 X 7.9	56
	CMB25		2.9 X 7.9	23
	CMB26A		10.2 X 4.5	45.9
Information Technology	RPLH1	5	12.4 X 7	87
	RPLH2		12.4 X 7	87
	RPLH3		12.4 X 7	87
	RPLH4		12.4 X 7	87
	RPLH32		12.4 X 7	87
Computer Science & Engineering	RPLH11	10	12.4 X 7	87
	RPLH12		12.4 X 7	87
	RPLH13		12.4 X 7	87
	RPLH14		12.4 X 7	87
	RPLH21		12.4 X 7	87
	RPLH22		12.4 X 7	87
	RPLH23		12.4 X 7	87
	RPLH24		12.4 X 7	87
	RPLH31		12.4 X 7	87
	RPLH134		12.4 X 7	87
Electronics & Communication Engineering	H6	10	12.3 X 8.4	103.3
	H9		9.14 X 8.4	76.8
	H28		9.46 X 8.4	79.5
	H28A		9.3 X 8.4	78.15
	H27A		9.53 X 8.4	80.08
	H26		12.3 X 8.4	103.3
	H25		7.85 X 8.4	66
	H23		9.14 X 8.4	76.8
	H22A		9.62 X 8.4	80.85
	ECMT		8.29 X 8.4	69.67

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Electrical & Electronics Engineering	H4	10	12.3 X 8.4	103.3
	H3		9.62 X 8.4	80.85
	H13		9.62 X 8.4	80.85
	H14		12.3 X 8.4	103.3
	DH5		9.6 X 8.4	80.7
	H21A		8.29 X 8.4	69.7
	H21B		9.37 X 8.4	78.78
	DH6		9.14 X 8.4	76.8
	H24		11.5 X 8.4	96.67
	H16		7.14 X 8.4	60
Electronics & Instrumentation Engineering	H19	3	9.31 X 8.4	78.2
	H27		8.98 X 8.4	75.5
	H29		9.14 X 8.4	76.8
General Engineering Block (1 <sup>st</sup> Year B.Tech)	GEB2	27	10.03 X 8.9	82.16
	GEB3		7.01 X 5.76	40.4
	GEB4		10.03 X 8.9	82.16
	GEB5		10.03 X 8.9	82.16
	GEB6		10.03 X 8.9	82.16
	GEB12		10.03 X 8.9	82.16
	GEB14		10.03 X 8.9	82.16
	GEB15		10.03 X 8.9	82.16
	GEB16		10.03 X 8.9	82.16
	GEB22		10.03 X 8.9	82.16
	GEB25		10.03 X 8.9	82.16
	GEB11		7.01 X 5.76	40.4
	GEB13		7.01 X 5.76	40.4
	GEB23		10.03 X 8.9	82.16
	GEB45		10.03 X 8.9	82.16
	GEB46		10.03 X 8.9	82.16
	GEB55		10.03 X 8.9	82.16
	GEB56		10.03 X 8.9	82.16
	GEB34		10.03 X 8.9	82.16
	GEB41		7.01 X 5.76	40.4
	GEB24		10.03 X 8.9	82.16
	GEB35		10.03 X 8.9	82.16
	GEB36		10.03 X 8.9	82.16
	GEB32		10.03 X 8.9	82.16
	GEB42		10.03 X 8.9	82.16
	GEB43		7.01 X 5.76	40.4
	GEB44		10.03 X 8.9	82.16
<b>DRAWING HALL</b>				
ECE	DH2	1	7.7 X 8.4	148.7

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EIE	DH3	1	7.7 X 8.4	148.7
EEE	DH4	1	7.7 X 8.4	148.7
Mechanical	GEBDH1	1	17 X 10	170
Mechanical	GEBDH2	1	17 X 10	170
<b>COMPUTER CENTRE</b>				
Chemical Engineering	CC	1	10.1 X 7.3	73.73
Civil Engineering	CC	1	14.94 X 7.51	112.2
Civil Engineering	CC	1	7.05 X 13.9	98
Mechanical Engineering	CC	1	7.05 X 16.55	117
Electronics & Communication Engineering	CC	1	8.7 X 8.4	73
Electrical & Electronics Engineering	CC	1	21 X 8.4	176
Electronics & Instrumentation Engineering	CC	1	8.7 X 8.4	73
1 <sup>st</sup> Year B.Tech. Labs	CC	1	17 x 10	170
<b>ALL LABORATORIES</b>				
Chemical	MVO	1	15 X 8.86	133
	MTO	1	15 X 8.86	133
	CRE	1	15 X 8.86	133
	HT	1	11 X 7.3	80.3
Civil Engineering	MT	1	13.96 X 17.56	245
	FM	1	21.38 X 17.56	375
	TE	1	20.75 X 7.05	146
	GT	1	10.27 X 21.17	217
	Surveying Stores	1	14.76 X 7.09	104.6
	EE	1	17.6 X 7.05	124
	EG	1	6.63 X 7.33	48.6
Mechanical Engineering	FO	1	17.7 X 7.05	125
	IC	1	10.27 X 21.17	217
	HT	1	14.76 X 7.09	105
	CAM	1	7.9 X 10.3	81
	Machine Shop	1	21.38 X 17.56	375
	Metrology Lab	1	13.96 X 8.78	122
	Fitting Lab	1	14.18 X 8.56	121
Computer Science & Engineering	RP11,12,21 &22	4	14.94 X 7.51	449
	L1,L2	2	13.42 X 9.31	250
Information Technology	RP 01	1	14.94 X 7.41	112
	L3,L4	2	13.42 X 9.31	250
Electronics & Communication Engineering	EDC	1	8.4 X 17.7	149
	DE	1	8.7 X 8.4	73
	DSP	1	8.4 X 17.7	149
	A.COM	1	21 X 8.4	176

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Electrical & Electronics Engineering	EM1	1	21 X 8.4	176
	EM2	1	21 X 8.4	176
	PS & EM	1	8.7 X 8.4	73
	EDC	1	10.96 X 8.4	92
	CS & PE	1	8.7 X 8.4	73
Electronics & Instrumentation Engineering	PROCESS	1	8.7 X 8.4	73
	BIO-M	1	8.7 X 8.4	73
	VI	1	8.7 X 8.4	73
	Transdures	1	17.7 X 8.4	149
	Embeded Systems	1	8.4 X 9.08	76
1 <sup>st</sup> Year B.Tech. Labs	Chemistry,Physics,English & CC	15	17 x 10	2550
Research Park Common Facilities	Robotics	1	14.94 X 7.51	112
	Siemens	1	14.94 X 7.51	112
	Bosch1	1	14.94 X 7.51	112
	Bosch2	1	14.94 X 7.51	112
<b>LIBRARY</b>				
Library	General Section	1	28.8 X 23.62	680.25
	Digital Library & Reference Section	1	28.8 X 23.62	680.25
<b>WORKSHOPS</b>				
Mechanical Engineering	Basic Trades	1	14.94 X 7.51	112.2
<b>Grand Total</b>				<b>18,017.35</b>

**a) Administrative Area.**

Particulars	Number of Rooms	L x B of the room in m	Total Carpet area (sq.m)
Principal Room	1	11.6 X 9.4	108.3
Admin. office	1	18.62 X 10.62	198

**CONFERENCE HALL**

MCH	1	11.6 X 9.4	108.7
MBCH	1	17.7 X 8.4	148.68
CMBCH	1	20.75 X 7.05	146.3
GEBCH1	1	17.14 X 9.9	169.70
GEBCH2	1	17.14 X 9.9	169.70
RPCH	1	13.87 X 10.4	144.25

**OTHERS (Administrative Area)**

Chemical Engineering HOD & Faculty Rooms	1	---	71.61
Civil Engineering HOD & Faculty Rooms	1	---	305
Mechanical Engineering HOD & Faculty Rooms	1	---	346.5
Electrical & Electronics Engineering HOD & Faculty Rooms	1	---	256
Electronics & Instrumentation Engineering HOD & Faculty Rooms	1	---	121.6

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Electronics & Communication Engineering HOD & Faculty Rooms	1	---	159
Computer Science & Engineering HOD & Faculty Rooms	1	---	332.5
Information Technology Engineering HOD & Faculty Rooms	1	---	271.9
Training & Placement	1	---	95
Bosch	1	---	47.5
1 <sup>st</sup> Year B.Tech. HOD & Faculty Rooms	1	---	508.9
Examination Hall	1	50.3 X 30.5	1534
Exam Section	1	50.3 X 15.25	767
<b>Grand Total</b>			<b>6010.14</b>

**b) Amenities Area**

Particulars	Number of Rooms	L x B of the room in m	Total Carpet area (sq.m)
Canteen	Kitchen	31.56 X 10.24	384.6
Dining Room	Dining	42.78 X 16.74	716
Guest House	Dining	16.74 X 21	351
Guest Rooms	16	--	578
Waiting Halls	MB	4.37 X 8.4	36.7
	CMB	6.63 X 7.09	47
	GEB	10 X 8.35	83.5
	RP	4.68 X 7.56	35.4
	CH	4.2 X 7.3	31
<b>OTHERS (Ladies Hostel)</b>			
Kitchen	1	9.2 X 9.2	84.64
Dining	1	20.7 X 12	248.4
Rooms	23	4.2 X 4.05	391
Rooms	4	4.2 X 6	101
Rooms	2	10.13 X 5.9	120
Rooms	2	4.2 X 4.07	59.38
Rooms	24	4.2 X 4.05	408
Common Hall	1	4.78 X 14.34	68.5
	1	10.35 X 12	124.2
Rooms	6	10 X 8.2	492
<b>Grand Total</b>			<b>4360.32</b>

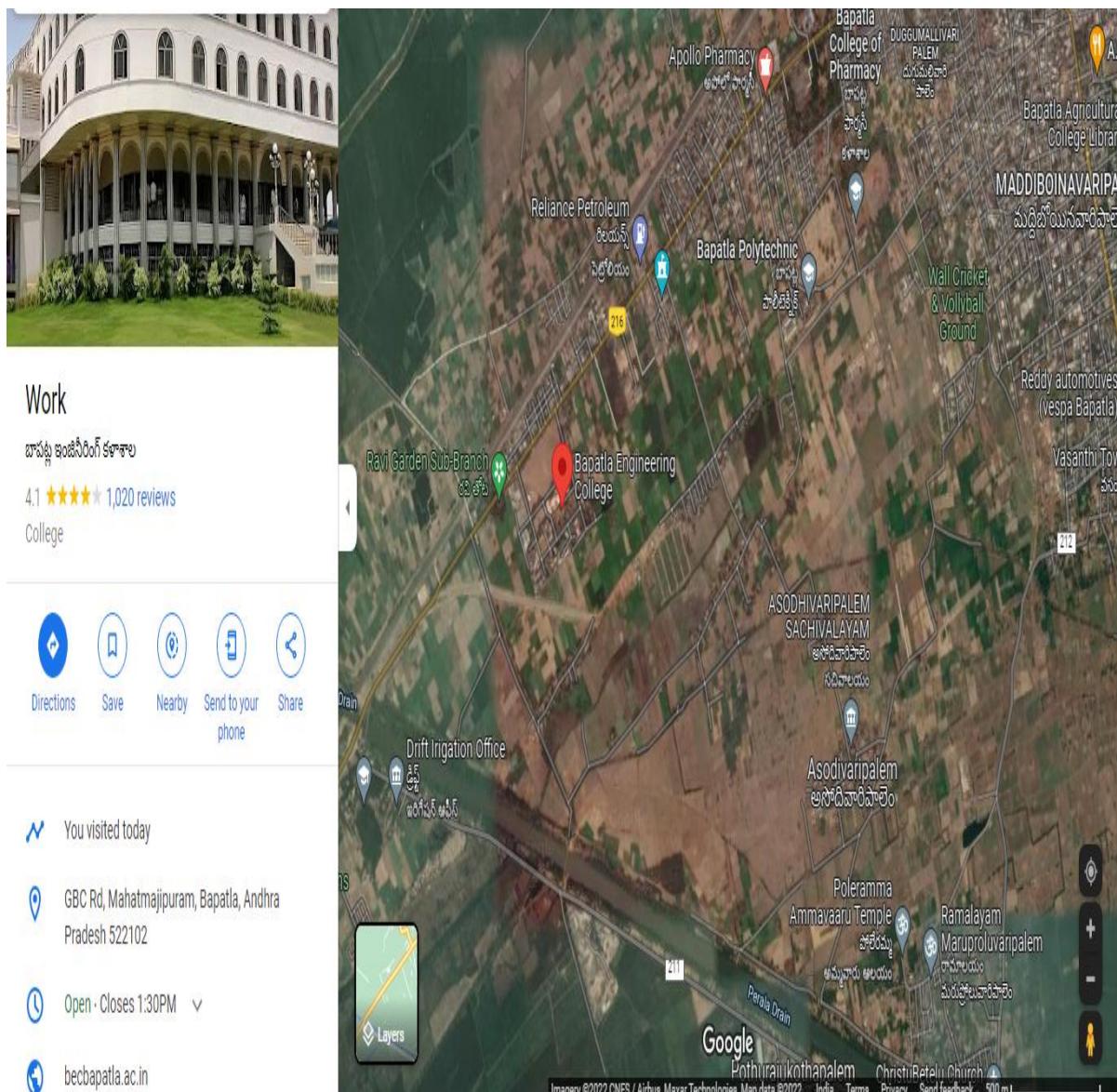
**c) Total Built up Area (Carpet Area in sq.m):**

Particulars	Total Carpet area (sq.m)
Instructional Area	<b>18,017.35</b>
Administrative Area & Others	<b>6,010.14</b>
Amenities Area & Others	<b>4,360.32</b>
Access & Circulation Area/Other	<b>22,271</b>
Total Built up area	<b>50,658.81</b>

# **GEOGRAPHICAL LOCATION WITH CAMPUS MAP IN SCALE**

## **GEOGRAPHICAL LOCATION WITH CAMPUS MAP IN SCALE**

The college has a sprawling pollution-free campus spread over 3 acres of land in the heart of Bapatla , Guntur.



Google Map of College Campus and Location map screen shoot

# **TREE DIVERSITY OF BEC**

**TREE DIVERSITY OF BEC, Bapatla.**

BEC is within the geo-position between latitude 16.2397747° N and longitude 80.083878° E in BEC, Andhra Pradesh, India. It encompasses an area of about 30 Acres. The area is immense diverse with a variety of tree species performing a variety of functions. Most of these tree species are planted in different periods of time through various plantation programmes organized by the authority and have become an integral part of the college.

The trees of the college have increased the quality of life, in terms of contributing to our environment by providing oxygen, improving air quality, climate amelioration, conservation of water, preserving soil, and supporting wildlife, controlling climate by moderating the effects of sun, rain and wind. Leaves absorb and filter the sun's radiant energy, keeping things cool in summer. Many species of birds are dependent on these trees mainly for food and shelter. Nectar of flowers and plants is a favorite of birds and many insects.

Leaf covered branches keep many animals, such as birds and squirrels, out of reach of predators. Different species display a seemingly endless variety of shapes, forms, texture and vibrant colors. Even individual trees vary their appearance throughout the course of the year as the seasons change. The strength, long lifespan and regal stature of trees give them a monument – like quality They also remind us the glorious history of BEC and our institution in particular. We often make an emotional connection with these trees and sometime become personally attached to the ones that we see every day.

A thick belt of large shady trees in the periphery of the college have found be bringing down noise and cut down dust and storms. Thus, the college has been playing a significant role in maintaining the environment of the entire BEC town and its surrounding areas.

“Green audit” is a principle introduced to make the educational institute environmentally sustainable. The purpose of the green audit is to ensure that the Green Policy is followed and implemented in the campus. Bapatla Engineering College implemented green-friendly practices to manage the available resources and has taken steps in environmental conservation and protection. As a part of such practice, internal environmental audit (Green Audit) is conducted to evaluate the actual scenario on the campus. A survey on trees and other greeneries within the campus was done by the committee.

The following are the tree species with whom we are being attached:

S.No.	Common Name	Scientific Name	Number
1	Duranta	Verbenaceae	1751
2	Sannajaji(Guthupulu)	Vjura	404
3	Mandara	Hibiscus-Roja-Sinusis	151
4	Muripinda	Acalypha	104
5	Tulasi	Sciumu	47
6	Thuja	Thuja occidentalis	44
7	Kanakambaram	Crossandra infundibuliformis	41
8	Devakanchana	Bauhinia variegata	35
9	Jasminum	Acharia tragodes	30
10	Tutturu Benda	Abutilon Indicum	29
11	Pagada	Clerodendrum paniculatum	24
12	Parijata	Cestrum Nocturnum	22
13	Cucumber	Magnolia acuminate	17
14	Sago palm	Cycas	26
15	Jennifer	Aster ericoides	16
16	Wild pea	Lathyrus Sativam	11
17	Radha Manohora	Quisqualis	6
18	Star light	Piaranthus Genus	4
19	Bitter gourd	Condalic Globosa	3
20	Vepa chettu	Azadirachta indica	273
21	Neredu chettu	Syzygium cumini (L.) Skeels	29
22	Subabulu	Leucaena leucocephala	26
23	Teak	Tectona grandis	16
24	Coconut	Cocos nucifera	45
25	Christmas Tree	Araucaria columnaris	5
26	Panasa chettu	Artocarpus heterophyllus Lam	1
27	Farms chettu	Parthenium hysterophorus	64
28	Badam	Terminalia catappa	8
29	Usirikaaya	Phyllanthus emblica	4
30	Kanuga	Millettia Pinnata	38
31	Mango	Mangifera indica	12
32	Marri chettu	Ficus benghalensis	2
33	Pogada chettu	Mimusops elengi Linn.	9

**Green Audit Report, BEC - 2021**

34	Raavi chettu	Ficus religiosa	4
35	Seethaphalam	Annona reticulata	2
36	Naringa chettu	Citrus sinensis	2
37	Ganneru chettu	Nerium oleander L.	8
38	Maddi chettu	Terminalia elliptica	2
39	Ashoka chettu	Saraca asoca	6
40	Yellow flower trees	Cascabela thevetia(L.) Lippold	3
41	Pala chettu	Alstonia scholaris	4
42	Sapota	Manilkara zapota	5
43	Parangi chettu	Couroupita guianensis	2
44	Kotanchu	Bryophyllum calcicola	41
45	Miriyalu	<u>Piperaceae</u>	22
46	donda	Coccinia grandis	20
47	Sampangi	Magnolia champaca	19
48	chitramata	Plumbago zeylanica	15
49	Akiranthu	Amaranthaceae	29
50	Table Plam	Livistona Rotundifolia	32
51	Rose	Portulaca grandiflora	22
52	Drumstick	Moringa oleifera	04
53	Henna Tree	Lawsonia inermis	02
54	Euphorbia cyathophora	Euphorbiaceae	2
55	Euphorbia Heterophylla	Euphorbiaceae	2
56	Euphorbia Neriifolia	Euphorbiaceae	1
57	Euphorbia tirucalli	Euphorbiaceae	2
58	Ficus amplissima	Moraceae	3
59	Ficus Hispida	Moraceae	4
60	Ficus racemosa	Moraceae	2
61	Ficus religiosa	Moraceae	1
62	Flueggea microcarpa	Euphorbiaceae	1
63	Flueggea leucopyrus	Euphorbiaceae	1
64	Furcraea Foetide	Asparagaceae	2
65	Gerbera Jamesonii	Asteraceae	1
66	Grevillea robusta	Proteaceae	2
67	Gymnema sylvestre	Asclepiadaceae	1

**Green Audit Report, BEC - 2021**

.			
68	Hemidesmus indicus	Asclepiadaceae	2
69	Hibiscus rosa sinensis	Malvaceae	1
70	Hibiscus sabdariffa	Malvaceae	2
71	Indigofera arrecta	Fabaceae	1
72	Ixora coccinia	Rubiaceae	2
73	Jasminum Cuspidatum	Oleaceae	3
74	Jasminum sambac	Oleaceae	2
75	Jasminum arborescens	Oleaceae	1
76	Jatropha curcas	Euphorbiaceae	2
77	Jatropha glandulifera	Euphorbiaceae	1
78	Jatropha gossypifolia	Euphorbiaceae	1
79	Justicia Adhatoda	Acanthaceae	3
80	Kydia calycina	Malvaceae	2
81	Lantana camara	Verbenaceae	1
82	Lawsonia inermis	Lythraceae	4
83	Leucaena leucocephala	Fabaceae	1
84	Limonia acidissima	Rutaceae	2
85	Manilkara Hexandra	Sapotaceae	1
86	Mangifera indica	Anacardiaceae	2
87	Manihot utilissima	Euphorbiaceae	2
88	Marus Alba	Moraceae	2
89	Melia azadirachta	Meliaceae	2
90	Mentha piperita	Labiatae	3
91	Mimosa pudica	Mimosaseae	4
92	Morinda pubescens	Rubiaceae	2
93	Moringa oleifera	Moringaceae	3
94	Moringa concanensis	Moringaceae	3
95	Murraya koenigii	Rutaceae	13
96	Musa paradisiaca	Musaceae	2
97	Musa sapientum	Musaceae	2

**Green Audit Report, BEC - 2021**

98	<i>Nerium Indicum</i>	Apocynaceae	3
99	<i>Nymphaea Caerulea</i>	Nymphaeaceae	4
100	<i>Ocimum canum</i>	Lamiaceae	3
101	<i>Ocimum gratissimum</i>	Lamiaceae	2
102	<i>Ocimum sanctum</i>	Lamiaceae	5
103	<i>Ocimum Tenuiflorum</i>	Lamiaceae	2
104	<i>Pamburus Missionis</i>	Rutaceae	2
105	<i>Pandanus odoratissimus</i>	Pandanaceae	1
106	<i>Pavetta Indica</i>	Rubiaceae	2
107	<i>Phoenix dactylifera</i>	Arecaceae	3

**Plantation Photos**



**Green Audit Report, BEC - 2021**



### Main Entrance – Bapatla Engineering College



### Administrative Building – Bapatla Engineering College



### General Engineering Block – Bapatla Engineering College



### Cricket practice net – Bapatla Engineering College



### Play Ground – Bapatla Engineering College



## Girls Hostel – Bapatla Engineering College



### Bapatla, Andhra Pradesh, India

Bapatla Engineering College, Malleswari, Bapatla, Andhra Pradesh 522102,

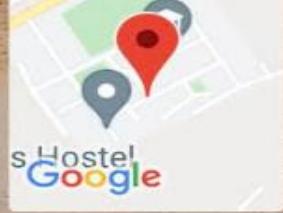
India

Lat 15.889492°

Long 80.441711°

23/03/22 10:11 AM

GPS Map Camera



## Canteen – Bapatla Engineering College



### Bapatla, Andhra Pradesh, India

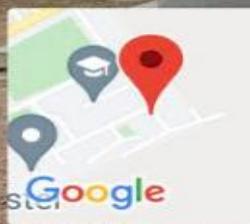
Mahatmajipuram, Chirala Road, Dist Guntur, Malleswari, Bapatla, Andhra Pradesh 522102, India

Lat 15.890029°

Long 80.442993°

23/03/22 10:05 AM

GPS Map Camera



**FAUNAL  
DIVERSITY  
IN BEC**

### **FAUNAL DIVERSITY IN BEC**

BEC is located in District of Guntur, Andhra Pradesh Indian. The highest temperature is recorded 42° C just prior to the onset of monsoon (around May- early June). Summer rain is normal, and is principally caused from late June to August by the moisture-laden South- West Monsoon, on striking the Himalayan foothills of the north. The climatic condition of the BEC district as a whole and BEC in particular is very suitable for a wide variedly of flora and fauna to support its rich biodiversity. The faunal Diversity of BEC campus has been studied and documented as below:

S.No	Common Name	Scientific Name
1.	Common Myna	<i>Acridotheres Tristis</i>
2.	House Sparrow	<i>Passer Domesticus</i>
3.	House Crow	<i>Corvus Splendens</i>
4.	Cuckoo	<i>Cuculidae</i>
5.	Snake	<i>Naja Naja</i>
6.	Yellow Wasp	<i>Ropalidia Marginata</i>
7.	Butter Fly	<i>Danaus Genutia</i>
8.	Honey bees	<i>Apis</i>
9.	Common Wood shrike	<i>Tephrodornis Pondicerianus</i>
10.	Pied Myna	<i>Gracupica Contra</i>
11.	Red-Vented Bulbul	<i>Pycnonotus Cafer</i>
12.	Skylark	<i>Aluda Gulgula</i>
13.	Garden Tiger Moth	<i>Arctia Caja</i>
14.	Little Owl	<i>Athene Brama</i>
15.	Oleander Moth	<i>Syntomeida Epilais</i>
16.	Slender Skimmer	<i>Orthetrum Sabina</i>
17.	Lizard	<i>Indian Garden Lizard</i>
18.	Guinea pig	<i>Cavia Porcellus</i>
19.	Grass Hopper	<i>Orthoptera</i>
20.	Squirrel	<i>Sciuridae</i>
21.	Scarab Beetle	<i>Coleoptera</i>
22.	Lizard	<i>Lacertilia</i>
23.	Pigeon	<i>Columbidae</i>
24	Parrots	Indian Rose Ringed Parakeet

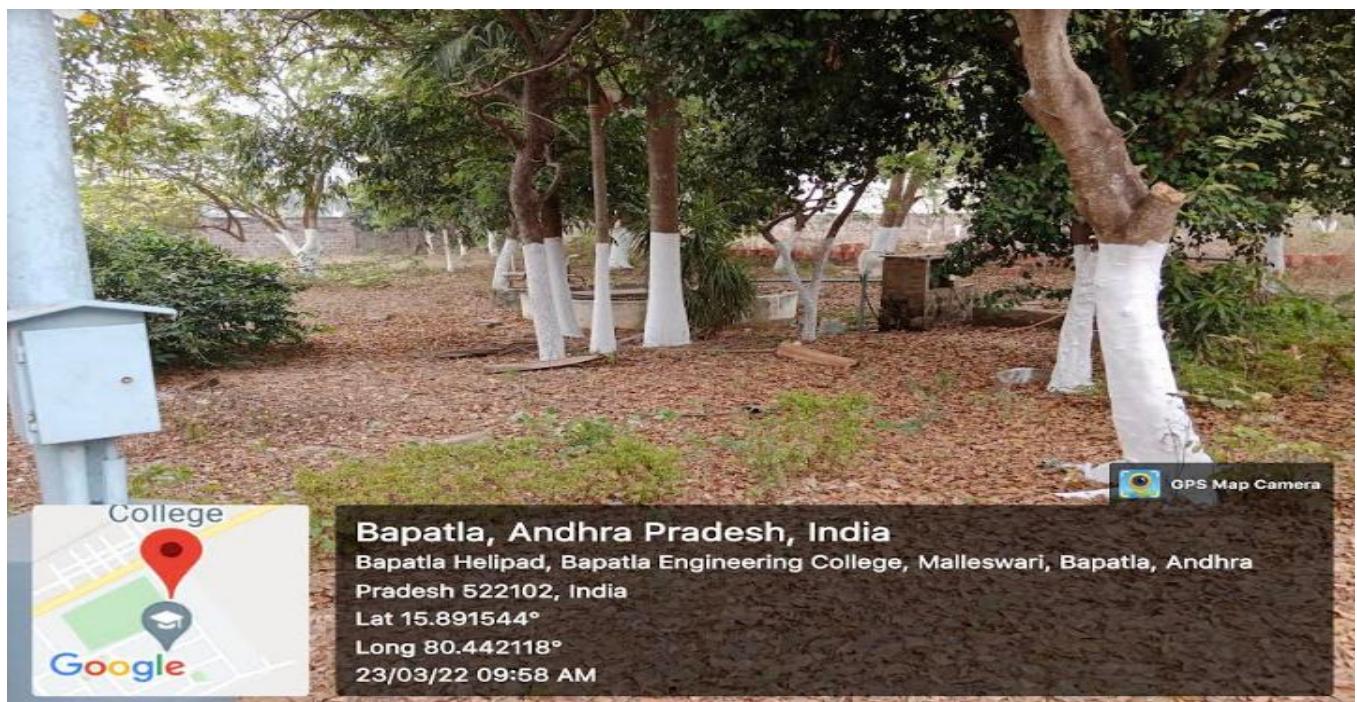
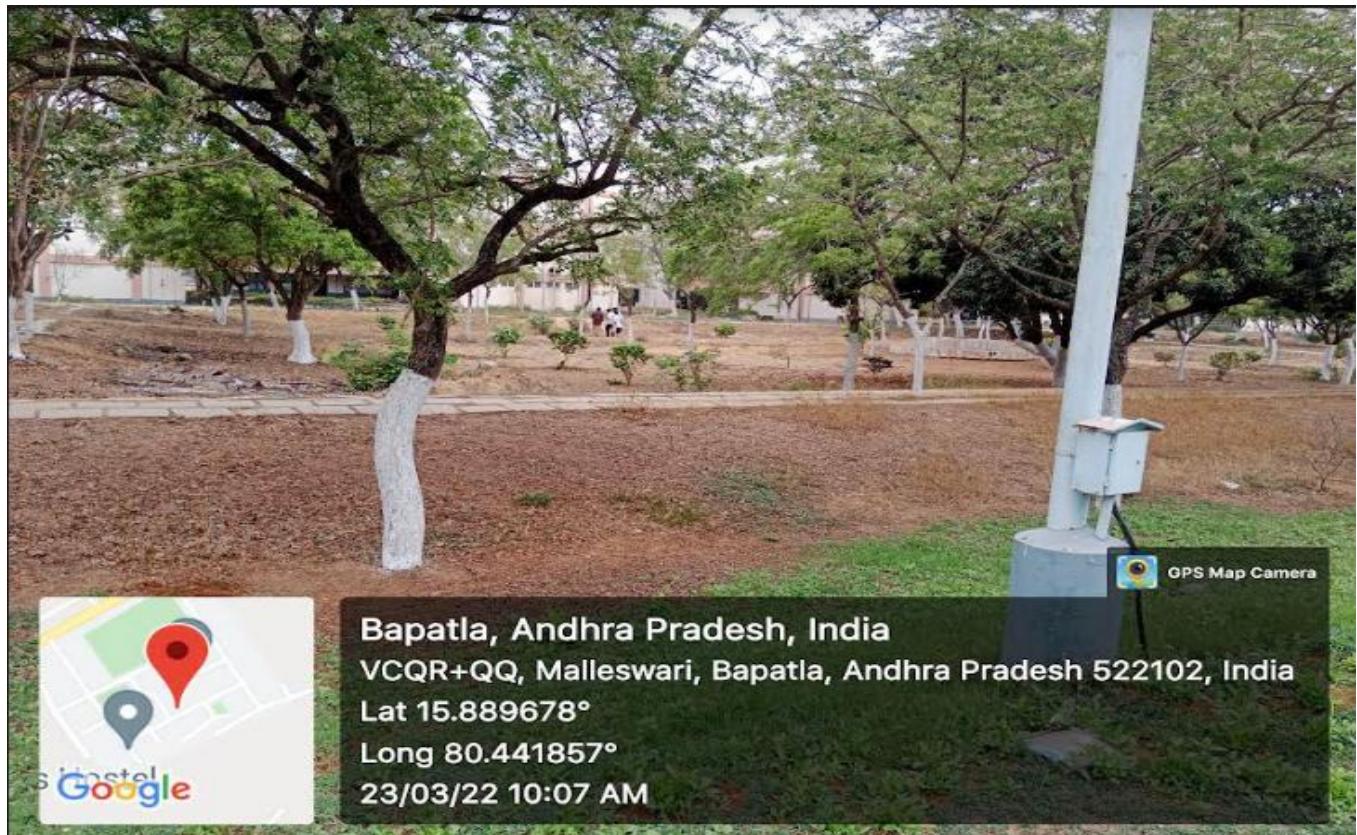


Bapatla, Andhra Pradesh, India  
Main Block, Malleswari, Bapatla, Andhra Pradesh 522102,  
India  
Lat 15.891002°  
Long 80.442446°  
23/03/22 09:59 AM



Bapatla, Andhra Pradesh, India  
Main Block, Malleswari, Bapatla, Andhra Pradesh 522102, India  
Lat 15.890963°  
Long 80.442514°  
23/03/22 10:00 AM

**Plants- Bapatla Engineering College**



**FLORAL  
DIVERSITY  
OF BEC**

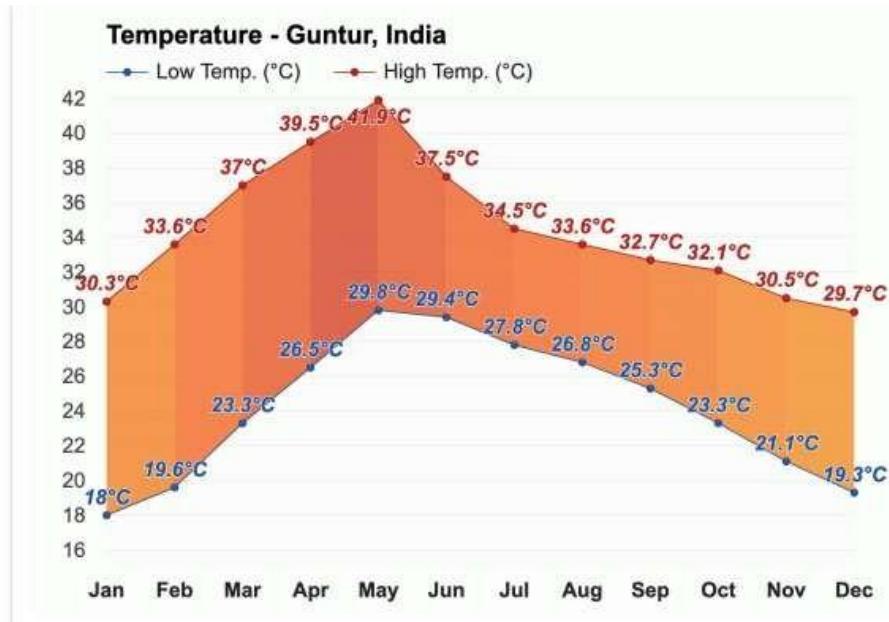
**LORAL DIVERSITY IN BEC**



# **WEATHER DATA OF BEC**

### Weather Data – 2020

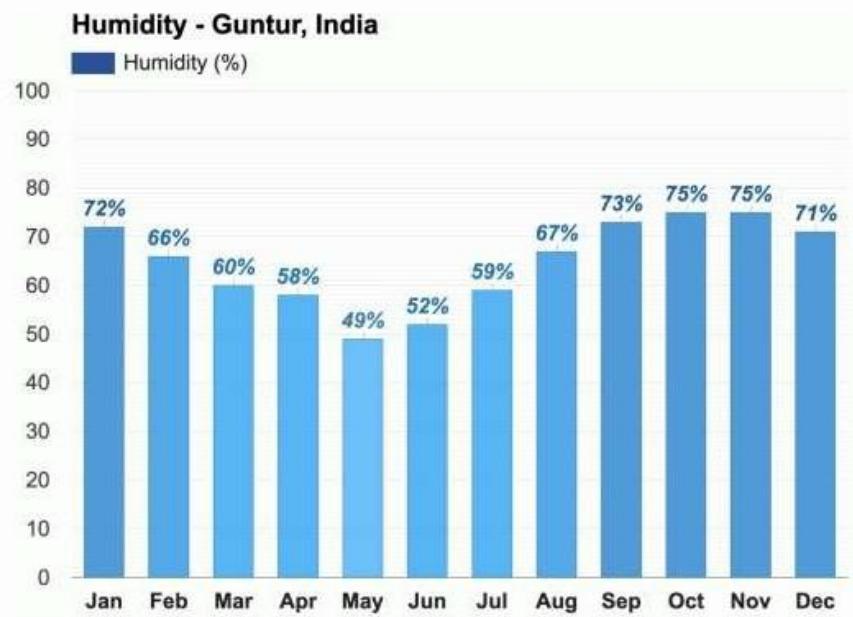
*Temperature at Bapatla Engineering College, Bapatla , Guntur*



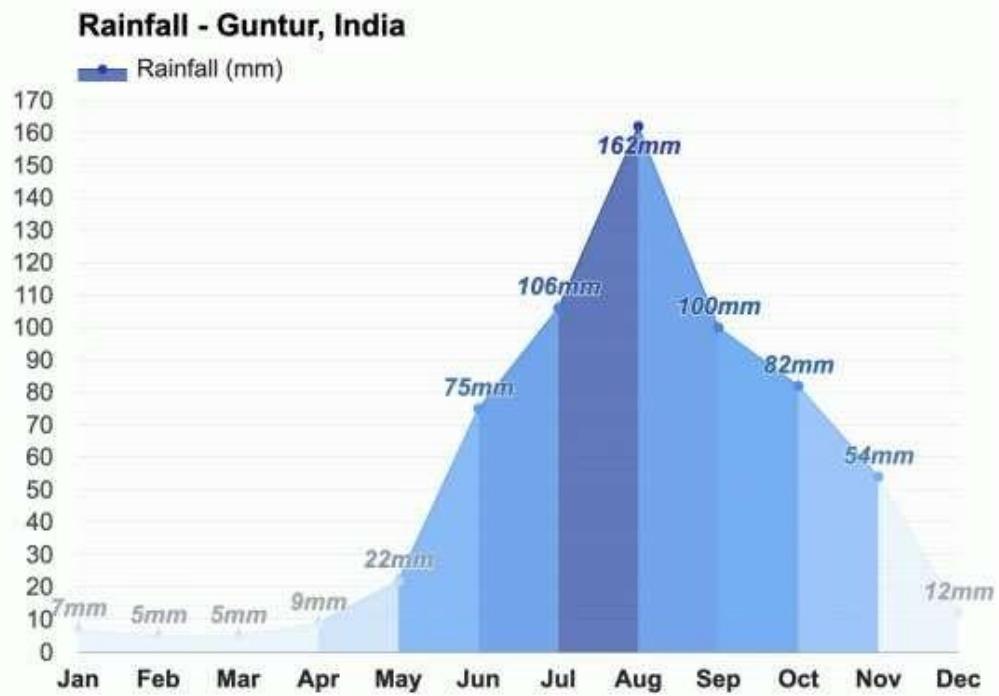
*Wind Speed at Bapatla Engineering College, Bapatla , Guntur*



*Humidity at Bapatla Engineering College, Bapatla , Guntur*



*Rainfall at Bapatla Engineering College, Bapatla , Guntur*



# **AIR QUALITY OF BEC**

BAPATLA ENGINEERING COLLEGE ,BAPATLA
AIR QUALITY ANALYSIS DETAILS AT BEC CAMPUS

Date of Report	13-11-21
Sample collected by	BEC Civil Final Yr Students
Sample collection Date	08-11-21
Sample Description/Code	AIR QUALITY ANALYSIS

S.NO	NAME OF THE PARAMETER	TEST RESULTS				NAAQS LIMITS	TEST METHOD		
		COLLEGE MAIN ENTRANCE	ADMIN BUILDING	CANTEEN AREA	SPORTS GROUND				
1	Particulate Matter (PM10)	62.8	53.4	52	75	100	IS 5182: Part- 23 (2012)		
2	Particulate Matter (PM2.5)	20.7	16.3	15.5	25	60	CPCB Manual (NAAQMS/36/2012-13) Gravimetric method (Cyclonic Flow technique)		
3	Sulphur dioxide as SO <sub>2</sub> (µg/m <sup>3</sup> )	0	0	0	0	80	IS 5182: Part- 2 (2012)		
4	Nitrogen dioxide as NO <sub>x</sub> (µg/m <sup>3</sup> )	0	0	0	0	80	IS 5182: Part- 6 (2012)		

  
 Checked by  
 P. Sai Kirshna., Asst.prof

  
 Authorized Signatory  
 Dr Ch Maruthi Devi., Prof

**Green Audit Report, BEC - 2021**

<b>BAPATLA ENGINEERING COLLEGE ,BAPATLA</b>
NOISE LEVEL MEASUREMENT DETAILS AT BEC CAMPUS

Date of Report	11/13/2021
Sample collected by	BEC Civil Final Yr Students
Sample collection Date	11/8/2021
Sample Description	Noise Level Measurements

S.NO	SAMPLING LOCATION	MEASUREMENT (DURATION IN SECS)	MINIMUM (dBA)	MAXIMUM (dBA)	AVERAGE (dBA)
1	College Main out Gate	60	41.5	73.5	57.5
2	Parking area	60	43	60.3	51.65
3	Administrative Block	60	40.3	71.4	55.85
4	CMB Block	60	48.5	72.1	60.3
5	Canteen	60	46.7	66.9	56.8
6	GEB Block	60	48.7	72.9	60.8
7	Main Block	60	48	74	61
8	Ladies Hostel	60	46	68	57
9	Sports ground	60	50.5	75.6	63.05
10	Chemical Engg Block	60	48.8	72	60.4
11	College Main In Gate	60	52	72	62

Checked by  
P. Sai Kirshna., Asst.prof

Authorized Signatory  
Dr Ch Maruthi Devi., Prof

**NOISE LEVEL IN  
THE  
SURROUNDING  
OF BEC**

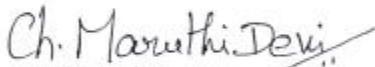
## Green Audit Report, BEC - 2021

BAPATLA ENGINEERING COLLEGE ,BAPATLA	
NOISE LEVEL MEASUREMENT DETAILS AT BEC CAMPUS	

Date of Report	11/13/2021
Sample collected by	BEC Civil Final Yr Students
Sample collection Date	11/8/2021
Sample Description	Noise Level Measurements

S.NO	SAMPLING LOCATION	MEASUREMENT (DURATION IN SECS)	MINIMUM (dBA)	MAXIMUM (dBA)	AVERAGE (dBA)
1	College Main out Gate	60	41.5	73.5	57.5
2	Parking area	60	43	60.3	51.65
3	Administrative Block	60	40.3	71.4	55.85
4	CMB Block	60	48.5	72.1	60.3
5	Canteen	60	46.7	66.9	56.8
6	GEB Block	60	48.7	72.9	60.8
7	Main Block	60	48	74	61
8	Ladies Hostel	60	46	68	57
9	Sports ground	60	50.5	75.6	63.05
10	Chemical Engg Block	60	48.8	72	60.4
11	College Main In Gate	60	52	72	62

  
Checked by  
P. Sai Kirshna., Asst.prof

  
Authorized Signatory  
Dr Ch Maruthi Devi., Prof

**WATER  
ANALYSIS  
REPORT OF BEC**

**Green Audit Report, BEC - 2021**

BAPATLA ENGINEERING COLLEGE ,BAPATLA WATER COLLECTION DETAILS AT BEC CAMPUS				
Month	Collection Water Details for 2018-19 (Million Litres)	Collection Water Details for 2019-20 (Million Litres)	Collection Water Details for 2020-21 (Million Litres)	Collection Water Details for 2021-22 (Million Litres)
January	6.1	6.2	6.25	6
Feb	6.2	6.3	6.3	5.8
March	6.3	6.1	4.2	6.2
April	6.5	6.4	2	5
May	6.3	6.4	2	4
June	2	2.5	2	4.65
July	5.9	6	2	5.6
August	5.85	6.2	2	3.5
September	6	6.23	3	4
October	5.7	6.2	3.5	4.5
November	5.8	5.9	2	5.8
December	5.9	5.95	4	6

BAPATLA ENGINEERING COLLEGE ,BAPATLA WATER Consumption Details at RFC CAMPUS				
Month	Water consumption Details for 2018-19 (Million Litres)	Water Consumption Details for 2019-20 (Million Litres)	Water Consumption Details for 2020-21 (Million Litres)	Water consumption Details for 2021-22 (Million Litres)
January	4.27	4.34	4.375	4.2
Feb	4.34	4.41	4.41	4.06
March	4.41	4.27	2.94	4.34
April	4.55	4.48	1.4	3.5
May	4.41	4.48	1.4	2.8
June	1.4	1.75	1.4	3.255
July	4.13	4.2	1.4	3.52
August	4.095	4.34	1.4	2.45
September	4.2	4.361	2.1	2.8
October	3.99	4.34	2.45	3.15
November	4.06	4.13	1.4	4.06
December	4.13	4.165	2.8	4.2

Checked by

P. Sai Kirshna, Asst.prof

Authorized Signatory

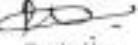
Dr Ch Maruthi Devi., Prof

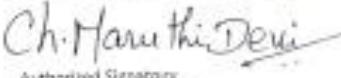
**Green Audit Report, BEC - 2021**

<b>BAPATLA ENGINEERING COLLEGE, BAPATLA</b>			
AIR QUALITY ANALYSIS DETAILS AT BEC CAMPUS			

Date of Report	11/11/2021	
Sample collected by	BEC Civil Final/Irr Students	
Sample collection Date	11/8/2021	
Sample Description/Code	AIR QUALITY ANALYSIS	

S.NO	NAME OF THE PARAMETER	TEST RESULTS				NAAQS LIMITS	TEST METHOD
		COLLEGE MAIN ENTRANCE	ADMIN BUILDING	CANTEEN AREA	SPORTS GROUND		
1	Particulate Matter (PM10)	62.8	53.4	52	75	100	IS 5182: Part- 23 (2012)
2	Particulate Matter (PM2.5)	20.7	16.3	15.5	15	60	QMCB Manual (NAAQS/36/2012-13) Gravimetric method (Cyclonic filter technique)
3	Sulphur dioxide as SO <sub>2</sub> ( $\mu$ g/m <sup>3</sup> )	0	0	0	0	80	IS 5182: Part- 2 (2012)
4	Nitrogen dioxide as NO <sub>2</sub> ( $\mu$ g/m <sup>3</sup> )	0	0	0	0	80	IS 5182: Part- 6 (2012)

  
 Checked by  
 P. Sai Krishna., Asst. prof

  
 Authorized Signatory  
 Dr Ch Manathi Devi., Prof

**Green Audit Report, BEC - 2021**

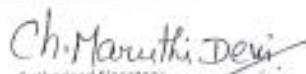
BAPATLA ENGINEERING COLLEGE ,BAPATLA BORE WATER DETAILS AT BEC CAMPUS		
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Date of Report	11/13/2021
Sample collected by	BEC-Civil Final Yr Students
Sample collection Date:	11/08/2021
Sample Description/Code	BORE WATER

S. No	Parameter	Unit	Method	Result	IS:10500 Limits	
					Acceptable	Permissible
1.	pH		APHA 23rd Edition; 4500-H-8	6.75	6.5 - 8.5	No relaxation
2.	Turbidity	NTU	APHA 23rd Edition; 2130-B	2	3	3
3.	Conductivity	$\mu\text{Mho}/\text{cm}$	APHA 23rd Edition; 2510-B	3055		
4.	Total Dissolved Solids	mg/L	APHA 23rd Edition; 2540-B	1986	500	2000
5.	Color	CU	APHA 23rd Edition; 2120-B	< 5	5	15
6.	Odor				Agreeable	Agreeable
7.	P. Alkalinity as $\text{CaCO}_3$	mg/L	APHA 23rd Edition; 2320-B	<5		
8.	Alkalinity as $\text{CaCO}_3$	mg/L	APHA 23rd Edition; 2320-B	450	200	600
9.	Total Hardness as $\text{CaCO}_3$	mg/L	APHA 23rd Edition; 2340-C	543	200	600
10.	Calcium as Ca	mg/L	APHA 23rd Edition; 3500-Ca-B	130	75	200
11.	Magnesium as Mg	mg/L	APHA 23rd Edition; 3500-Mg-B	71	30	100
12.	Sodium as Na	mg/L	APHA 23rd Edition; 3500-Na-B	640		
13.	Potassium as K	mg/L	APHA 23rd Edition; 3500-K-B	14		
14.	Chlorides as $\text{Cl}^-$	mg/L	APHA 23rd Edition; 4500-Cl-	820	250	1000
15.	Sulphates as $\text{SO}_4^{2-}$	mg/L	APHA 23rd Edition; 4500-SO4	190	200	400
16.	Nitrate Nitrogen as N	mg/L	APHA 23rd Edition; 4500	10.3	45	No Relaxation
17.	Fluorides as $\text{F}^-$	mg/L	APHA 23rd Edition; 4500	0.8	1	1.5
18.	Iron as Fe	mg/L	APHA 23rd Edition; 4500	<0.3	0.3	No Relaxation
19.	Manganese as Mn	mg/L	APHA 23rd Edition; 3500	<0.1	0.1	0.3
20.	Phenolic Compounds as Phenol mg/L	mg/L	APHA 23rd Edition; 5530-B	< 0.001	0.001	0.002
21.	hexavalent Chromium as $\text{Cr}_6^{6+}$ /mg/L	mg/L	APHA 23rd Edition; 2130-B	< 0.01	0.05	No Relaxation
22.	Residual Chlorine as Cl	mg/L	APHA 23rd Edition; 2130-B	< 0.01	0.2	3
23.	Total Cyanide	mg/L	APHA 23rd Edition; 3111-B	< 0.01	0.05	No Relaxation
24.	Copper as Cu	mg/L	APHA 23rd Edition; 3111-B	< 0.01	0.05	1.5
25.	Cadmium Cd	mg/L	APHA 23rd Edition; 3111-B	< 0.01	0.003	No Relaxation
26.	Zinc as Zn	mg/L	APHA 23rd Edition; 3111-B	< 0.5	5	15
27.	Lead as Pb	mg/L	APHA 23rd Edition; 3111-B	< 0.01	0.01	No Relaxation

  
Checked by

F. Sai Krishna., Asst.prof

  
Authorized Signatory

Dr Ch Manuthi Devi., Prof

**Green Audit Report, BEC - 2021**

**BAPATLA ENGINEERING COLLEGE ,BAPATLA  
WASTE WATER DETAILS AT BEC CAMPUS**

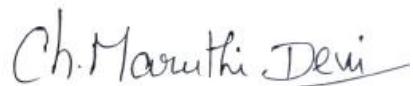
Date of Report	11/13/2021
Sample collected by	BEC Civil Final Yr Students
Sample collection Date	11/8/2021
Sample Description/Code	Waste Water

S.No	Parameter	Method	Unit	Result
1	pH	APHA 23rd Edition 4500 H + B		7.34
2	Total Dissolved Solids	APHA 23rd Edition 2540 C	mg/l	710
3	Total Suspended Solids	APHA 23rd Edition 2540 D	mg/l	74
4	Chemical Oxygen Demand as (COD)	APHA 23rd Edition 5220 B	mg/l	63
5	Biological Oxygen Demand as (BOD)	IS : 3025(Part- 44) : 2009	mg/l	23
6	Oil & Greease	APHA 23rd Edition, 5520 B	mg/l	< 7



Checked by

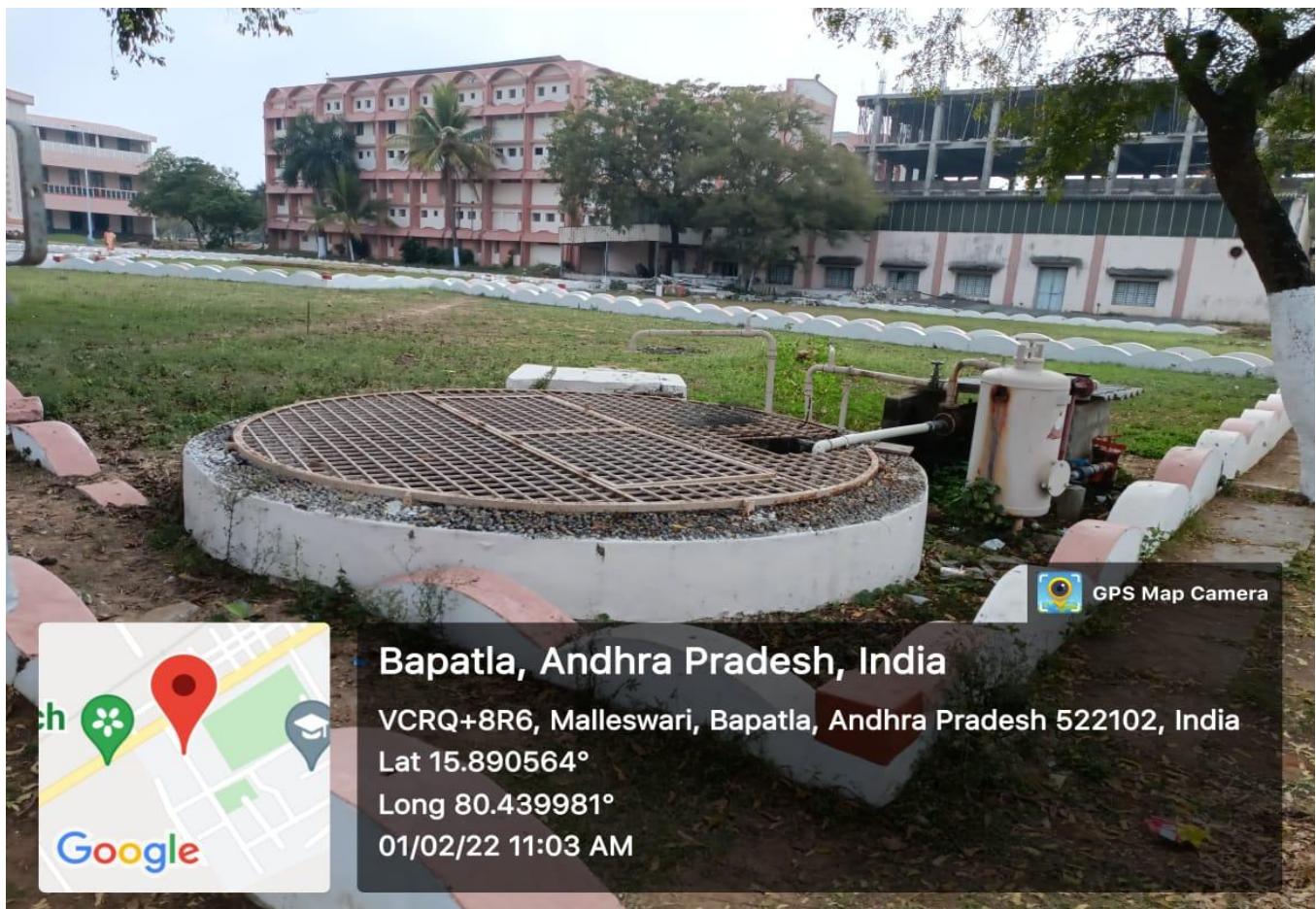
P. Sai Kirshna., Asst.prof



Ch. Maruthi Devi  
Authorized Signatory  
Dr Ch Maruthi Devi., Prof

### Percolation Well

15.889988158596893, 80.44051372267285



Water conservation facilities available in the Institution

<b>Bapatla Engineering College, Bapatla , Guntur</b>			
<b><u>Water Consumption Details</u></b>			
<b>Month</b>	<b>Consumption Details for 2018-19 (Liters in Lakhs)</b>	<b>Consumption Details for 2019-20 (Liters in Lakhs)</b>	<b>Consumption Details for 2020-21 (Liters in Lakhs)</b>
January	7.6	7.5	7.4
February	7.5	7.3	7.3
March	7.6	7.4	7.5
April	8.3	8.1	8.1
May	8.7	8.5	8.5
Jun	8.2	7.6	8.7
July	8.0	7.9	8.1
August	7.9	7.3	7.6
September	7.6	7.2	7.5
October	7.3	7.5	7.1
November	7.2	7.1	7.8
December	8.0	8.2	8.1

<b>Bapatla Engineering College, Bapatla , Guntur</b> <u>Water Collection Details at BEC Campus</u>			
<b>Month</b>	<b>Collection Details for 2018-19 (Liters in Lakhs)</b>	<b>Collection Details for 2019-20 (Liters in Lakhs)</b>	<b>Collection Details for 2020-21 (Liters in Lakhs)</b>
January	9.7	9.6	9.5
February	9.6	9.4	9.4
March	9.7	9.5	9.6
April	10.4	10.2	10.2
May	10.8	10.6	10.6
June	10.3	9.7	10.8
July	10.0	10.0	10.2
August	10.0	9.4	9.7
September	9.7	9.3	9.6
October	9.4	9.6	9.2
November	9.3	9.2	9.9
December	10.0	10.3	10.2

**WASTE DISPOSAL  
AT  
BEC**

## **Waste Management**

### **Solid waste management:**

Solid waste is collected from hostel rooms each morning by housekeeping staff in separate containers and assembled at the waste yard marked as compost pit at extreme end of the campus. Here the dry waste including paper/plastics etc. is segregated and sent in vans to recyclable joints and/or Municipal Corporation dump yard. We encourage students and staff not to use plastic items. Also we encourage them to reuse the plastic items. Many of our students are encouraged for making best from waste items by using plastic bottles etc. In our college campus NO PLASTIC sign boards are available at various places to encourage students and staff not to use plastic item. On behalf of July 3, 2021 an International "NO PLASTIC" day, Civil Department of Bapatla Engineering College conducted a national webinar on "Plastic-Impact and Alternative Measures" by Dr.G.V.K.S.V.Prasad., Prof. and Principal of Usha Rama College of Engineering & Technology, Telaprolu, Krishna District,A.P. details of the programm is given below.



The waste generated in the campus includes wrappers, glass, metals, paper, plastics, etc. Old newspapers, used papers, workshop scrap etc. are given for recycling to external agency like ITC limited which is started in 2007 with an objective to educate people on recycling of waste to protect environment, conserve natural resources, incubate the habit of source segregation among the citizens, recover the dry recyclable waste which is going in to landfill and make it available for recycling and incentivize the municipal workers. Glass, metals, plastic and other non-biodegradable wastes are given to Chirala Municipality Corporation where they are segregated and disposed/ recycled according to the nature of the waste.

College adopts almost paperless concept by digitization of office procedures through electronic means via WhatsApp group, email; thus, reducing paper-based waste and reduce carbon dioxide emissions. Also to encourage paper waste in the aspect of teaching and learning - Slip tests, Quizzes etc, are conducted using various apps and by sharing link to

the students. PowerPoint are also shared to student's whatsapp groups by the faculty members to reduce the wastage in paper printing as well as expenses. Use of paper printed on one side is encouraged in print drafts before final document, meeting minutes, memos and notes in office practices as environmentally preferred alternative to waste management. Biodegradable kitchen waste from mess and cafeteria is collected in separate bins. Horticultural waste such as dried leaves, twigs, and plant clippings is collected from all around the campus and used for vermi composting. Dustbins have been installed throughout campus for waste segregation. The chemical bottles which are made by plastic and used vehicle tires were used for plantation that gives impressive landscape look garden of the institution. Students are encouraged to use waste paper and newspaper in creative practices during various extracurricular activities.

**Reducing Plastic Usage:** Now a days the usage of plastic has increased, which is a great problem to the environment as it takes hundreds of years for the waste plastic to decompose. Though govt. has planned to stop the usage of plastic bags the implementation of the same has become a major challenge for the government as there is very little awareness on the problems of plastic usage in general public. So, it is our duty to reduce the usage of plastic by spreading awareness on the problems associated with plastic. Thus, our cadets has took up this as challenge and started an awareness program to reduce the usage. Under this activity we visited some of the streets and made people aware of how we are damaging environment by usage of plastic



***Liquid Waste Management:***

Liquid waste is generated from Science laboratories, Hostels, Guest House and canteen.

Liquid wastes generated are of two types:

- Sewage Waste
- Laboratory and canteen effluent.

The liquid wastes are mainly drained to improve the ground level of water.

Hazardous Chemicals are kept separately in the laboratory away from the reach of students.

Lab In-charge and lab-assistant takes care of the chemicals and safety norms in the laboratory are strictly followed. Students are made aware of the hazardous chemicals and safety aspects when they are given instructions before utilizing the chemicals. The chemicals are wisely utilized for the batches of students in morning and afternoon under the guidance of faculty. Water for washing and rinsing of glassware for cleaning is done with regular water in low amounts. The Chemicals used in the experiments are diluted and after usage the chemical waste gets mixed with routine waste water. The rain water and the water which is over floated from water tanks are diverted towards lawn/garden through pipe lines.

***E-waste management:***

Electronic goods are put to optimum use; the minor repairs are set right by the laboratory assistants and the major repairs are handled by the support of technical assistants. The equipment which cannot be refurbished for re-use is dismantled and remanufactured into raw materials (i.e. metals, plastics, glass) to be marketed as recyclable. Input devices like keyboards which are of no use are utilized by students for their typing practice and teaching in a very basic level. UPS Batteries are recharged / repaired / exchanged by the suppliers. The waste compact discs and other disposable non-hazardous items are used by students for scrap art in extracurricular activities.

***Any other relevant information:***

The institution conducts academic exhibition annually where the participants from schools and colleges are invited. As a part of this, the students of the institution makes exhibits by using solid waste like papers, water bottles, iron pieces, rubbers and other e – waste like tube

## **Green Audit Report, BEC - 2021**

lights, bulbs and CPU fans.

Also institution held various events like scrap art, essay writing, painting on the eve of World water day in association with NSS unit and ISPOR chapters. BEC has successfully formed swachhta action plan and the participated various events.



Certificate Number: MGNCRE SAP AP HEI ANU 023

*This is to certify that **Bapatla Engineering College, Guntur, A P** is now a Recognized Swachhta Action Plan Institution. The Institution has successfully formed the Swachhta Action Plan Committee and constituted the working groups Post COVID-19 for Sanitation & Hygiene, Waste Management, Water Management, Energy Management and Greenery along with the observation of two environment related days to inculcate in faculty, students and community, the practices of Swachhta and Reduction, Reuse and Recycling of Resources.*

*Dr. W G Prasanna Kumar  
Chairman*

Mahatma Gandhi National Council of Rural Education  
Department of Higher Education, Ministry of Education  
Government of India

# **TRANSPORTATION**



Bus facility for students and staff



15.891019398846812, 80.43968357897286



15.890322876927696, 80.44094555831545

Pedestrian friendly pathways



**Green Audit Report, BEC - 2021**

15.888747954594939, 80.4408275410984



15.888747954594939, 80.4408275410984





Car Parking Place at BEC



Bicycle parking for students

# **ELECTRICAL ENERGY CONSUMPTION AT BEC**

<b>ELECTRICAL CONSUMPTION OF BEC (2017-2021)</b>						
S. No	Month	2017	2018	2019	2020	2021
1	January	44,858	49,358	41,369	49,226	35,955
2	February	60,630	59,288	61,884	61,783	49,647
3	March	75,300	74,670	73,659	56,221	69,357
4	April	68,355	69,098	63,337	20,548	37,657
5	May	39,345	35,565	36,730	26,238	28,875
6	June	55,928	52,823	49,904	35,352	34,585
7	July	82,755	81,825	70,794	36,223	48,434
8	August	83,018	74,517	75,154	29,829	53,889
9	September	67,545	74,391	76,554	40,871	46,227
10	October	82,575	64,893	69,850	39,655	55,410
11	November	69,893	63,547	65,829	40,039	52,211
12	December	61,478	63,030	62,017	36,146	50,638
<b>Total (KWh)</b>		<b>7,91,680</b>	<b>7,63,005</b>	<b>7,47,081</b>	<b>4,72,131</b>	<b>5,62,885</b>

**Replacement of Halogen Lamps with LED's**

S. No	Halogen Lamps			LED's Replaced					
	Power Rating	Qty	Total Power	Philips Make			Efftronics Make		
				Power Rating	Qty	Total Power	Power Rating	Qty	Total Power
1	250 W	36 No	9.0 KW	90 W	26 No	2.34 KW	28 W	10 No	280 W

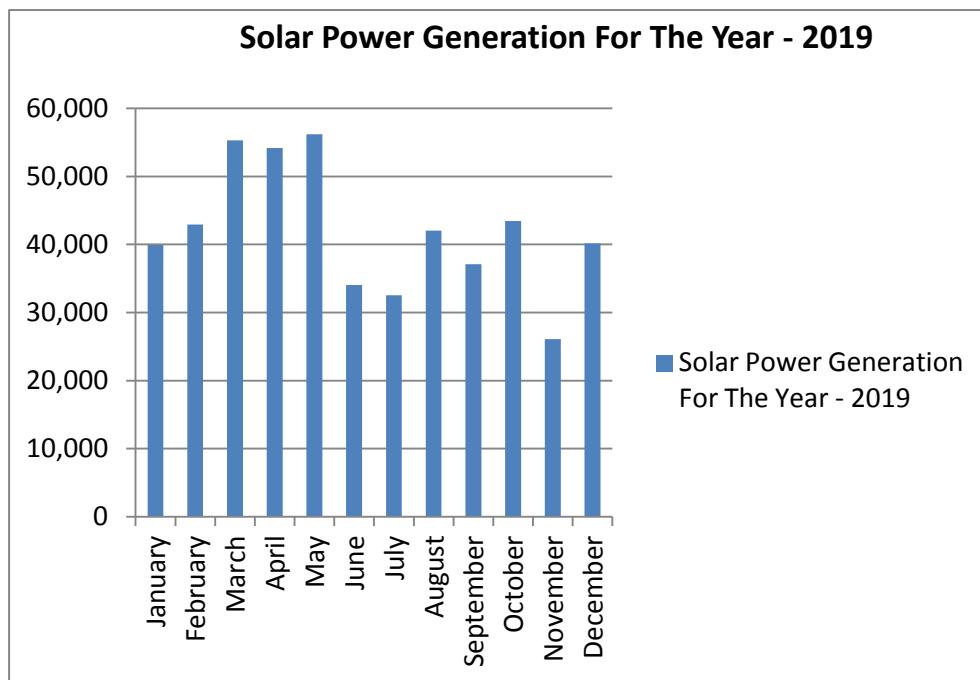
**Replacement of Tubelight's with LED's**

S. No	Tube Light's			LED's Replaced		
	Power Rating	Qty	Total Power	Philips Make		
				Power Rating	Qty	Total Power
1	40 W	172 No	6.88 KW	20 W	172 No	3.44 KW

Total 15.88 KW of power consumption is reduced to 6.06 KW with the replacement of Halogen Lamps and Tube Light's with LED's.

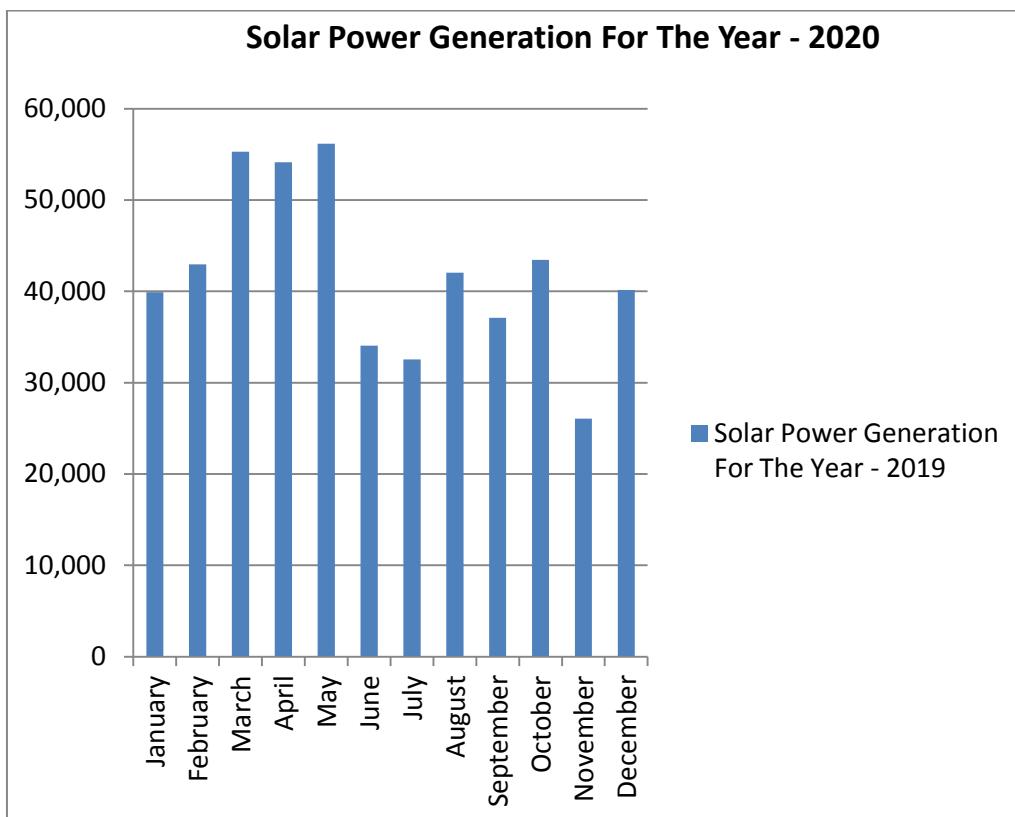
# **SOLAR ENERGY GENERATION IN BEC**

<b>S. No</b>	<b>Month</b>	<b>Solar Generation in units (KWh)</b>						<b>Total Generated Units</b>
		<b>Admin Block</b>	<b>Main Building</b>	<b>Ladies Hostel</b>	<b>Research Park</b>	<b>General Engineering Block</b>	<b>Civil &amp; Mechanical Block</b>	
<b>1</b>	January	10,045	9,388	5,937	4,417	4,599	4,614	<b>39,000</b>
<b>2</b>	February	11,339	10,396	6,079	4,617	5,925	5,459	<b>43,815</b>
<b>3</b>	March	14,761	14,261	7,766	6,632	7,666	7,489	<b>58,575</b>
<b>4</b>	April	13,596	14,047	7,409	6,392	7,200	7,178	<b>55,822</b>
<b>5</b>	May	10,550	13,259	6,905	6,308	6,621	5,740	<b>49,383</b>
<b>6</b>	June	10,371	10,935	5,829	4,784	5,538	5,368	<b>42,825</b>
<b>7</b>	July	8,528	9,139	5,301	4,212	4,804	4,692	<b>36,676</b>
<b>8</b>	August	10,234	10,107	5,775	4,327	5,335	5,279	<b>41,057</b>
<b>9</b>	September	9,402	9,327	5,213	3,910	4,916	4,668	<b>37,436</b>
<b>10</b>	October	9,896	9,065	5,432	3,821	5,113	4,583	<b>37,910</b>
<b>11</b>	November	11,032	9,483	6,220	4,047	5,762	5,501	<b>42,045</b>
<b>12</b>	December	9,716	8,359	5,455	4,007	5,026	4,686	<b>37,249</b>
<b>Total Units</b>		<b>1,29,470</b>	<b>1,27,766</b>	<b>73,321</b>	<b>57,474</b>	<b>68,505</b>	<b>65,257</b>	<b>5,21,793</b>

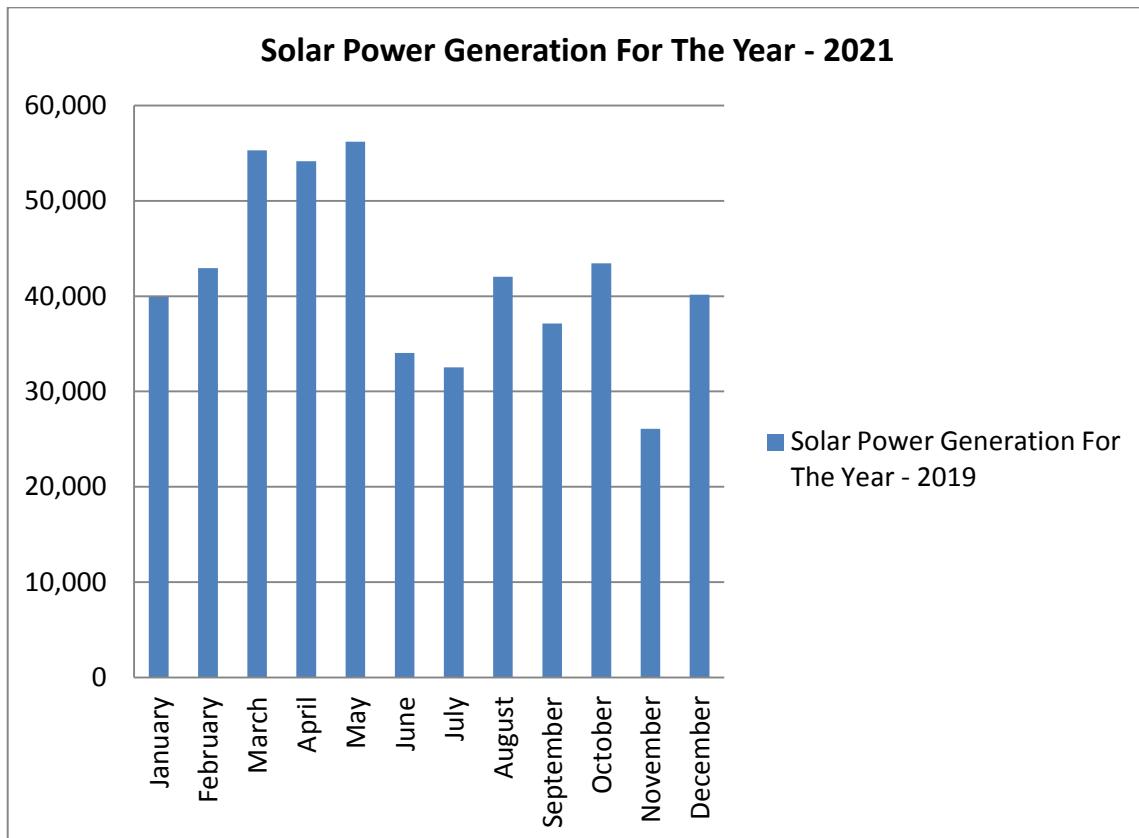


**400 kWp Solar Plant Generation – 2020**

S. No	Month	Solar Generation in units (KWh)						Total Generated Units
		Main Building	Admin Block	Research Park	General Engineering Block	Civil & Mechanical Block	Ladies Hostel	
1	January	9,685	11,238	4,643	5,777	5,366	6,231	42,940
2	February	10,473	12,190	5,513	6,252	6,387	6,703	47,518
3	March	12,106	13,929	6,161	7,201	7,186	7,441	54,024
4	April	13,318	13,965	4,911	7,149	7,274	7,345	53,962
5	May	13,560	12,279	324	7,232	7,097	7,394	47,886
6	June	10,613	10,593	-	5,664	4,320	5,881	37,071
7	July	10,283	10,364	-	5,455	3,810	5,683	35,595
8	August	9,129	9,118	4,324	4,967	4,431	5,116	37,085
9	September	8,868	8,928	4,672	5,130	4,567	5,300	37,465
10	October	9,201	9,581	4,717	5,271	4,871	5,548	39,189
11	November	7,941	9,433	4,182	4,862	4,341	5,110	35,869
12	December	8,655	9,930	4,438	5,106	4,868	5,550	38,547
Total Units		1,23,832	1,31,548	43,885	70,066	64,518	73,302	5,07,151



<b>S. No</b>	<b>Month</b>	<b>Solar Generation in units (KWh)</b>						<b>Total Generated Units</b>
		<b>Main Building</b>	<b>Admin Block</b>	<b>Research Park</b>	<b>General Engineering Block</b>	<b>Civil &amp; Mechanical Block</b>	<b>Ladies Hostel</b>	
<b>1</b>	January	8,951	9,794	4,477	5,648	5,165	5,875	<b>39,910</b>
<b>2</b>	February	10,022	9,943	4,923	6,129	5,690	6,239	<b>42,946</b>
<b>3</b>	March	13,130	13,538	6,424	7,476	7,313	7,427	<b>55,308</b>
<b>4</b>	April	13,316	12,710	6,524	7,210	7,189	7,210	<b>54,159</b>
<b>5</b>	May	13,950	13,448	6,973	7,245	7,324	7,247	<b>56,187</b>
<b>6</b>	June	10,957	-	5,635	5,780	5,801	5,870	<b>34,043</b>
<b>7</b>	July	10,363	659	5,245	5,394	5,242	5,637	<b>32,540</b>
<b>8</b>	August	10,119	10,361	5,179	5,488	5,146	5,751	<b>42,044</b>
<b>9</b>	September	6,280	9,858	4,920	5,396	5,094	5,565	<b>37,113</b>
<b>10</b>	October	10,111	10,955	5,031	5,871	5,491	5,988	<b>43,447</b>
<b>11</b>	November	5,642	6,233	2,998	3,764	3,521	3,913	<b>26,071</b>
<b>12</b>	December	8,904	10,422	4,493	5,342	5,126	5,868	<b>40,155</b>
<b>Total</b>		<b>1,21,745</b>	<b>1,07,921</b>	<b>62,822</b>	<b>70,743</b>	<b>68,102</b>	<b>72,590</b>	<b>5,03,923</b>



# **ENERGY CONSUMPTION AND EXPORT**

**Solar Plant Exported Units & Imported Units From APCPDCL For The Year 2019**

S. No	Month	Total Units Generated From Solar Plant	Exported Units to Grid	Total Units Consumed From Solar Plant	Imported Units From APCPDCL	Net Units Consumed By The Institute
1	January	39,000	19,250	19,750	21,619	41,369
2	February	43,815	13,686	30,129	31,755	61,884
3	March	58,575	17,443	41,132	32,527	73,659
4	April	55,822	19,342	36,480	26,857	63,337
5	May	49,383	26,726	22,657	14,073	36,730
6	June	42,825	19,203	23,622	26,282	49,904
7	July	36,676	5,244	31,432	39,362	70,794
8	August	41,057	9,101	31,956	43,198	75,154
9	September	37,436	7,274	30,162	46,392	76,554
10	October	37,910	12,694	25,216	44,634	69,850
11	November	42,045	7,773	34,272	31,557	65,829
12	December	37,249	10,126	27,123	34,894	62,017
<b>Total (KWh)</b>		<b>5,21,793</b>	<b>1,67,862</b>	<b>3,53,931</b>	<b>3,93,150</b>	<b>7,47,081</b>



**Solar Plant Exported Units & Imported Units From APSPDCL For The Year 2020**

S. No	Month	Total Units Generated From Solar Plant	Exported Units to Grid	Total Units Consumed From Solar Plant	Imported Units From APCPDCL	Net Units Consumed By The Institute
1	January	42,940	17,510	25,430	23,796	49,226
2	February	47,518	15,228	32,290	29,493	61,783
3	March	54,024	26,433	27,591	28,630	56,221
4	April	53,962	43,321	10,641	9,907	20,548
5	May	47,886	33,250	14,636	11,602	26,238
6	June	37,071	15,917	21,154	14,198	35,352
7	July	35,595	12,963	22,632	13,591	36,223
8	August	37,085	21,180	15,905	13,924	29,829
9	September	37,465	15,649	21,816	19,055	40,871
10	October	39,189	16,602	22,587	17,068	39,655
11	November	35,869	16,008	19,861	20,178	40,039
12	December	38,547	18,080	20,467	15,679	36,146
Total		5,07,151	2,52,141	2,55,010	2,17,121	4,72,131

In addition to making Environmental Studies a very vital subject in our syllabus, BEC has gone a step further by putting that theory into practice. The energy from this solar installation is helping offset the institute's daytime peak electricity demand from the grid. BEC with the installation of 400KWP solar rooftop plant and was able to offset 50% of its energy usage from the state grid thus moving towards a more reliable and greener option and reducing its carbon footprint.

The rise in global temperatures year after year poses an existential threat to the planet. The global leaders and the United Nations (UN) have been showing great concerns in various summits and conferences about measures, international laws and agreements to sustainable development and environmental conservation. No wonder, ignorance of this may result in fatal natural disasters, economic bottlenecks resulting in endangered inhabitation. The management and the administration of Bapatla Engineering College in pursuance of "Going green" has established a Grid tied solar project to meet the electrical power requirement needs of the college and to preserve natural resources for current and future generations.

**Solar Plant Exported Units & Imported Units From APCPDCL For The Year 2021**

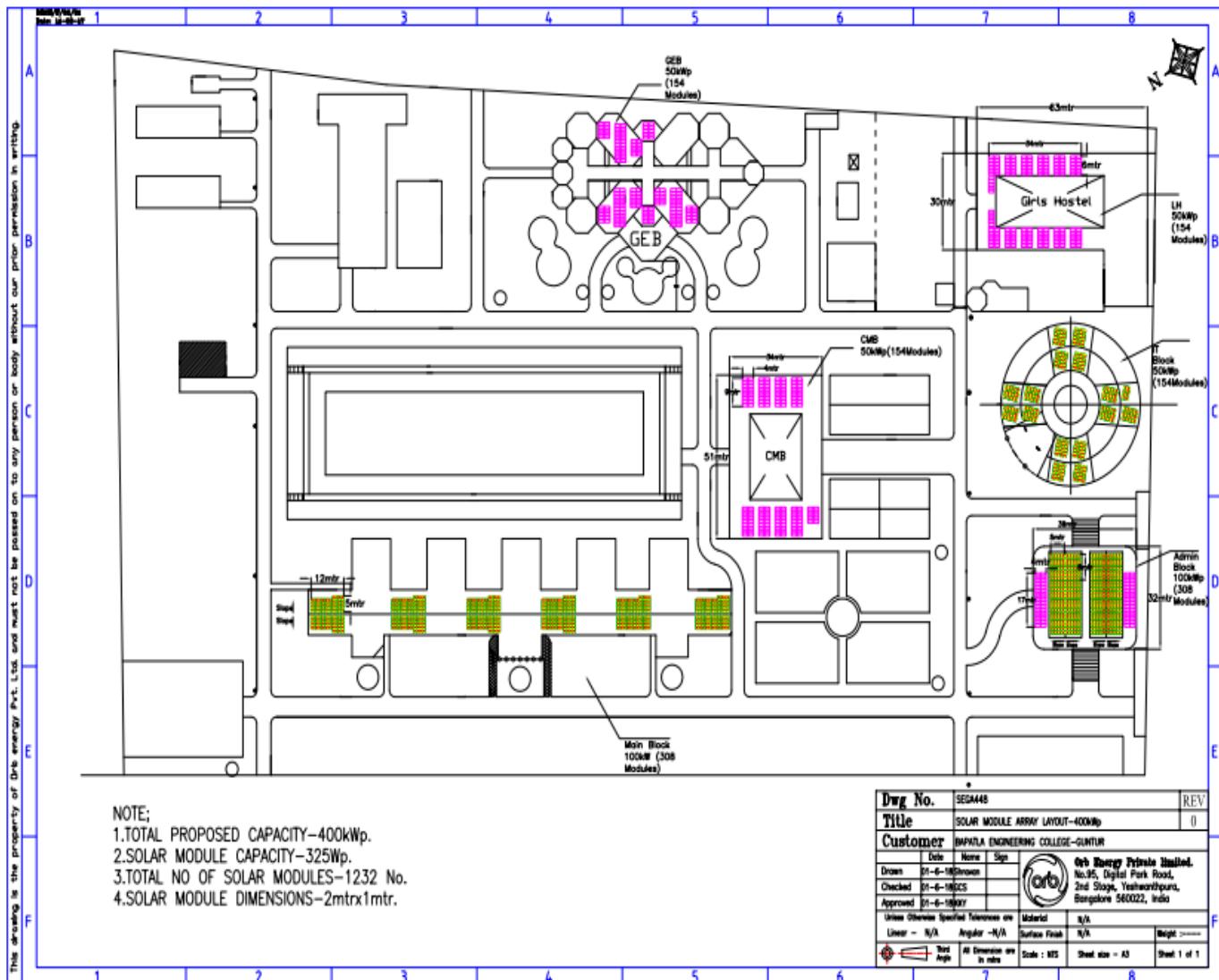
<b>S. No</b>	<b>Month</b>	<b>Total Units Generated From Solar Plant</b>	<b>Exported Units to Grid</b>	<b>Total Units Consumed From Solar Plant</b>	<b>Imported Units From APCPDCL</b>	<b>Net Units Consumed By The Institute</b>
<b>1</b>	January	39,910	20,243	19,667	16,288	35,955
<b>2</b>	February	42,946	14,530	28,416	21,231	49,647
<b>3</b>	March	55,308	14,990	40,318	29,039	69,357
<b>4</b>	April	54,159	31,409	22,750	14,907	37,657
<b>5</b>	May	56,187	38,272	17,915	10,960	28,875
<b>6</b>	June	34,043	13,585	20,458	14,127	34,585
<b>7</b>	July	32,540	7,020	25,520	22,914	48,434
<b>8</b>	August	42,044	12,656	29,388	24,501	53,889
<b>9</b>	September	37,113	10,979	26,134	20,093	46,227
<b>10</b>	October	43,447	16,757	26,690	28,720	55,410
<b>11</b>	November	26,071	3,625	22,446	29,765	52,211
<b>12</b>	December	40,155	12,913	27,242	23,396	50,638
<b>Total</b>		<b>5,03,923</b>	<b>1,96,979</b>	<b>3,06,944</b>	<b>2,55,941</b>	<b>5,62,885</b>

The total capacity of the installation is 400 kWp (kilowatt 'peak' power output) which was established with an initial cost of 1.20 Crore. A total of 1232 multi crystalline panels each with 325 Wp were installed on rooftops of various buildings. The invertor network comprises of 8 units with 50 kVA capacity. The following show typical panel installation.

Even for power failures, solar plant is generating the power with the help of PV\_DG Controller. It controls the solar power generation from 1% to 100% as per the load requirement by maintaining spinning reserve of DG at about 25-30%. Apart from this, a 300KVAR APFC panel has installed at incoming main busbar to maintain Unity Power Factor throughout a day.

In future, the college is planning to be self-sufficient for its electrical power requirements by introducing energy efficient lamps, fans and solar streetlights for contributing to the sustainable development and environmental conservation. The Bapatla Engineering College Solar panels positions in detail drawing given blow.

# Green Audit Report, BEC - 2021



**EXPENDITURE ON  
GREEN  
INITIATIVES  
DURING THE LAST  
FIVE YEARS**

**EXPENDITURE ON GREEN INITIATIVES DURING THE LAST FIVE YEARS**

<b>Financial Year</b>	<b>Garden Maintenance (Rs)</b>	<b>Purchase of LED's (Rs)</b>	<b>Renewable sources (Solar Panels) (Rs)</b>	<b>Total (Rs.)</b>
2021 - 2022	3,00,568/-			3,00,568/-
2020 - 2021	2,05314/-			2,05314/-
2019 - 2020	7,30,895/-	2,78,400/-		10,09,295
2018 – 2019	3,82,734/-		1,20,00,000/-	123,82,734/-
2017 – 2018	3,00,764/-		--	3,00,764/-

-----THE END-----