

GREEN AUDIT REPORT

of

Shri Gajanan Maharaj Shikshan Prasarak Mandal's,
SHARADCHANDRA PAWAR ARTS AND COMMERCE COLLEGE,
Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune 412105.

Year: 2019-20

Prepared by

ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society
Near Muktagan English School, Parvati, Pune 411009
Phone: 09890444795 Email: enrichcons@gmail.com





MAHARASHTRA ENERGY DEVELOPMENT AGENCY



Maharashtra Energy Development Agency
(A Government of Maharashtra undertaking)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006,
Ph No: 020-26614393/266144403
Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2018-19/CR-05/4174

19th September, 2018

**CERTIFICATE OF REGISTRATION
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : **Enrich Consultants**
Yashashree, Plot No. 26, Nirmal Bag Society,
Near Muktagan English School,
Parvati, Pune - 411009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme*

Registration Number : *MEDA/ECN/CR-05/2018-19/EA-03*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31st March 2021** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.


(Smita Kudarikar)
General Manager (EC)





ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society,
Near Mukatangan English School, Parvati, Pune 411 009
Tel: 020-24220747 Email: enrichcons@gmail.com

Ref: EC/ SGMSPMSPACC /19-20/02

Date: 12/8/2020

CERTIFICATE

This is to certify that we have conducted Green Audit at Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College, Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune - 412105 in the year 2019-20.

The College has adopted following Green Practices:

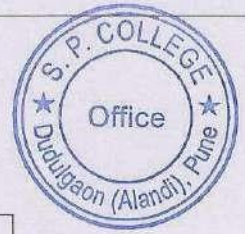
- Usage of Energy Efficient LED Fittings
- Segregation of Waste at source
- Installation of Rain Water Management Project
- Maintenance of Good Internal Road
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of awareness on Resource Conservation by Display of Posters

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor, EA-8192





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ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College, Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune-412105, for awarding us the assignment of Green Audit of their Dudulgaon campus for the Year: 19-20.

We are thankful to all staff members for helping us during the field study.





EXECUTIVE SUMMARY

1. Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College, Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune 412105 consumes Energy in the form of **Electrical Energy**; used for various gadgets, Office & other facilities.

2. Energy Consumed and CO₂ Emission:

No	Parameter	Energy Consumed, kWh	CO ₂ emissions, MT
1	Total	12133	10.92
2	Maximum	1238	1.11
3	Minimum	803	0.72
4	Average	1011.08	0.91

3. Various Measures Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

4. Usage of Renewable Energy Source:

- The College has yet to install Roof Top Solar PV Plant.

5. Waste Management:

5.1 Segregation of Waste at Source:

The Waste is segregated at source and the recyclable waste like Paper waste, Plastic Waste is handed over to authorized agency.

5.2 Organic Waste Management:

It is recommended to compost the organic waste like leafy and canteen waste.

6. Rain Water Management:

The College has installed Rainwater Management Project. The rain water falling on the terrace is collected through pipes and is used to increase the underground water table.

7. Green & Sustainable Practices:

- Good Internal Roads
- Internal Tree Plantation
- Provision of Ramp for Divyangajan

8. Assumption:

- 1 kWh (Unit) of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere

9. Reference: For CO₂ calculations: www.tatapower.com





ABBREVIATIONS

- SGMSPM : Shri Gajanan Maharaj Shikshan Prasarak Mandal
LED : Light Emitting Diode
kWh : kilo-Watt Hour
MT : Metric Ton
CO₂ : Carbon Di Oxide





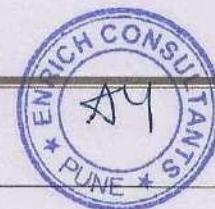
CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study present Energy Consumption
2. To Study the present CO₂ emissions
3. To study Usage of Renewable Energy
4. To study Waste Management practices
5. To study Green & Sustainable Practices

1.2 Table No-1: General Details of College:

No	Head	Particulars
1	Name	Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College
2	Address	Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune 412 105
3	Year of Establishment	2002
3	Affiliation	Savitribai Phule Pune University





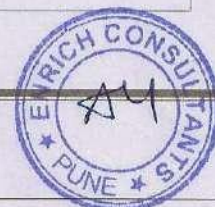
CHAPTER-II

STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumption
Table No 2: Electrical Energy Purchase Analysis- 19-20:

No	Month	Energy Consumed, kWh
1	Apr-19	960
2	May-19	901
3	Jun-19	803
4	Jul-19	840
5	Aug-19	961
6	Sep-19	966
7	Oct-19	1238
8	Nov-19	1043
9	Dec-19	1022
10	Jan-20	1013
11	Feb-20	1193
12	Mar-20	1193
13	Total	12133
14	Maximum	1238
15	Minimum	803
16	Average	1011.08

Chart No 1: To study the variation of Month wise Energy Consumed, kWh:



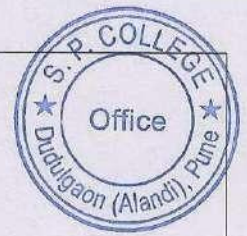


Table No 3: Important parameters:

No	Parameter	Energy consumed, kWh
1	Total	12133
2	Maximum	1238
3	Minimum	803
4	Average	1011.08





CHAPTER-III CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions:

The basis of Calculation for CO₂ emissions due to Electrical Energy are: 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere.

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-19	960	0.86
2	May-19	901	0.81
3	Jun-19	803	0.72
4	Jul-19	840	0.76
5	Aug-19	961	0.86
6	Sep-19	966	0.87
7	Oct-19	1238	1.11
8	Nov-19	1043	0.94
9	Dec-19	1022	0.92
10	Jan-20	1013	0.91
11	Feb-20	1193	1.07
12	Mar-20	1193	1.07
13	Total	12133	10.92
14	Maximum	1238	1.11
15	Minimum	803	0.72
16	Average	1011.08	0.91





Chart No 2: Representation of Month wise CO₂ emissions:

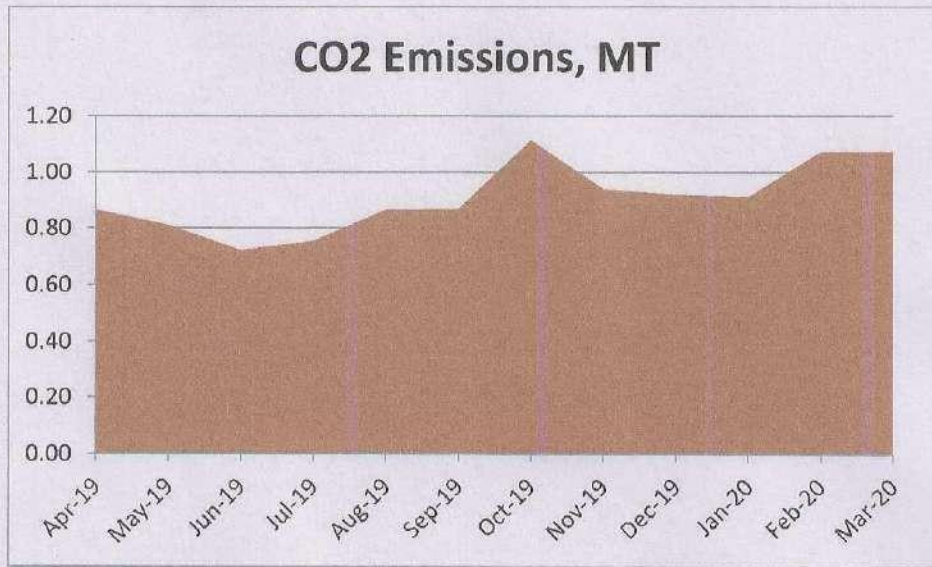


Table No 5: Key observations:

No	Parameter	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	12133	10.92
2	Maximum	1238	1.11
3	Minimum	803	0.72
4	Average	1011.08	0.91





CHAPTER-IV
STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof top Solar PV Plant.





CHAPTER-V STUDY OF WASTE MANAGEMENT

5.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste bins are located at various locations

Photograph of Waste Collection Bin:



5.2 Organic Waste Management:

It is recommended to compost the organic waste like leafy and canteen waste.



CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to increase the underground water table.

Photograph of Rain Water Carrying Pipe:





CHAPTER-VII

STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Roads:

The College has well maintained pedestrian road as to facilitate the easy movement of the students within the campus.

Photograph of Road within campus:



7.2 Internal Tree Plantation:

The College has well maintained Tree Plantation.

Photograph of Tree Plantation:



7.3 Provision of Ramp for Divyangajan:

The College has made provision of Ramp for the Divyangajan.

Photograph of Ramp for Divyangajan:



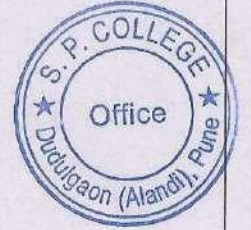
Prinjal
PRINCIPAL
Sharadchandra Pawar Arts & Commerce College
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ENVIRONMETAL AUDIT REPORT

of

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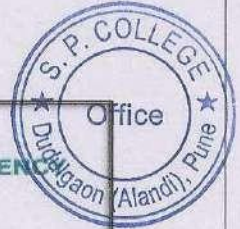
Year: 2019-20

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General Manager (EC)



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The College has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Fittings
- Segregation of Waste at source
- Installation of Rain Water Management Project
- Tree Plantation in the campus

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Enrich Consultants,

A handwritten signature in blue ink, appearing to read "A Mehendale".

A Y Mehendale,
Certified Energy Auditor, EA-8192

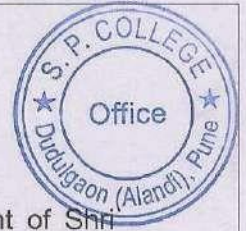




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6	Study of Environment Friendly Practices	16



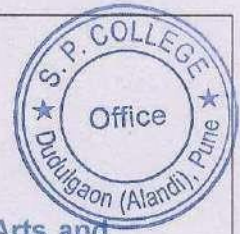


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EXECUTIVE SUMMARY

1. **Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College, Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune 412105** consumes Energy in the form of **Electrical Energy**; used for various gadgets, Office & other facilities.

2. Pollution due to Day to Day Activities:

- **Air pollution:** Mainly CO₂ on account of Electricity Consumption
- **Solid Waste:** Bio degradable Waste, Garden Waste, Recyclable Waste and Human Waste
- **Liquid Waste:** Human Liquid waste

3. Energy Purchased & CO₂ Emission:

No	Parameter	Energy consumed, kWh	CO ₂ Emissions, MT
1	Total	12133	10.92
2	Maximum	1238	1.11
3	Minimum	803	0.72
4	Average	1011.08	0.91

4. Various Measures Adopted for Environmental Conservation:

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It is recommended to compost the organic waste like leafy and canteen waste.

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The College has installed Rainwater Management Project. The rain water falling on the terrace is collected through pipes and is used to increase the underground water table.





8. Eco Friendly Practices:

- Internal Tree Plantation

9. Assumption:

- 1 kWh (Unit) of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere

10. Reference:

1. For CO₂ calculations: www.tatapower.com

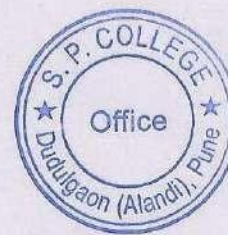




ABBREVIATIONS

SGMSPM	:	Shri Gajanan Maharaj Shikshan Prasarak Mandal
AQI	:	Air Quality Index
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO ₂	:	Carbon Di Oxide





CHAPTER-I INTRODUCTION

1.1 Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"

1.1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

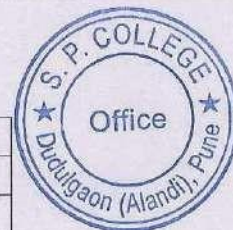
1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules





2011	E-waste (Management and Handling) Rules
2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

1.1.6 National Environmental Plans & Policy Documents: Table No-3:

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research College)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10.	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

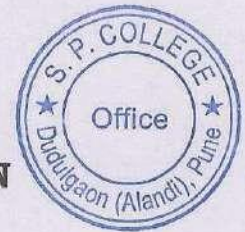
1.2 Objectives:

1. To study Recourse Consumption and CO₂ Emission
2. To Study CO₂ Emission Reduction
3. To Study Indoor Air Quality
4. To study Indoor Comfort Parameters
5. To Study Waste Management Practices
6. To Study Rain Water Harvesting
7. To study Environment Friendly Practices

1.3 Table No-4: General Details of College:

No	Head	Particulars
1	Name	Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College
2	Address	Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune 412 105
3	Year of Establishment	2002
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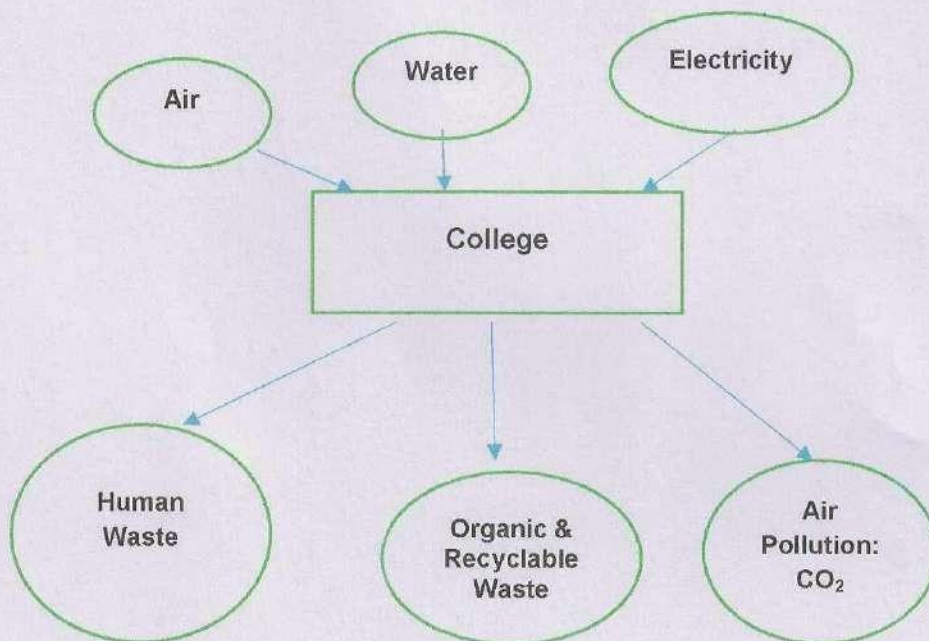
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The College consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No: 1: Representation of College as System:



We compute the Generation of CO₂ on account of consumption of Electrical Energy as under. The basis of Calculation for CO₂ emissions due to Electrical Energy are: 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere.

Table No 5: Electrical Energy Usage & CO₂ Emission: 19-20:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-19	960	0.86
2	May-19	901	0.81
3	Jun-19	803	0.72
4	Jul-19	840	0.76
5	Aug-19	961	0.86





6	Sep-19	966	0.87
7	Oct-19	1238	1.11
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12	Mar-20	1193	1.07
13	Total	12133	10.92
14	Maximum	1238	1.11
15	Minimum	803	0.72
16	Average	1011.08	0.91

Chart No 2: To study CO₂ Emission:

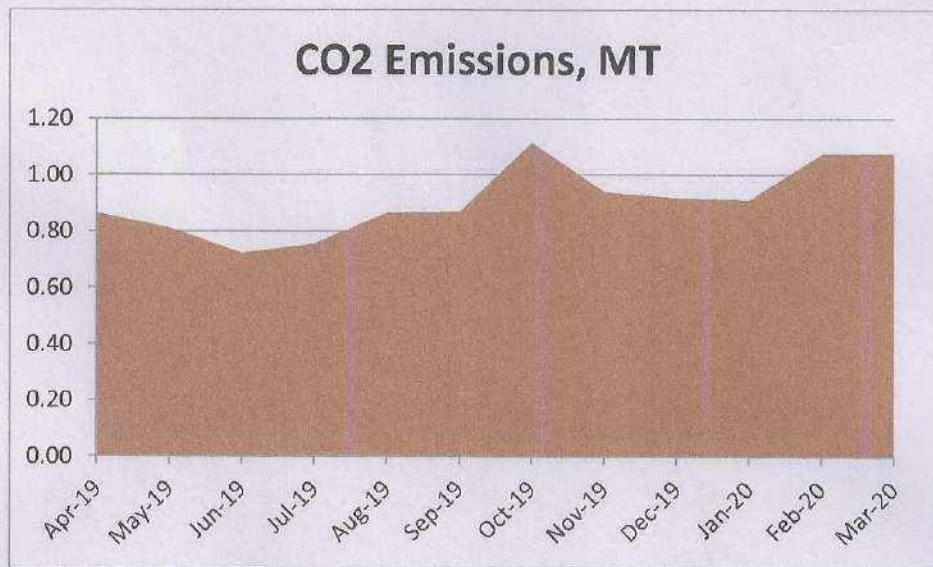


Table No 6: Important parameters:

No	Parameter	Energy Consumed, kWh	CO ₂ emissions, MT
1	Total	12133	10.92
2	Maximum	1238	1.11
3	Minimum	803	0.72
4	Average	1011.08	0.91



CHAPTER-III
STUDY OF USAGE OF RENEWABLE ENERGY



The College has yet to install Roof top Solar PV Plant.





CHAPTER-IV STUDY OF WASTE MANAGEMENT

4.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste bins are located at various locations

Photograph of Waste Collection Bin:



4.2 Organic Waste Management:

It is recommended to compost the organic waste like leafy and canteen waste.





CHAPTER-V STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to increase the underground water table.

Photograph of Rain Water Carrying Pipe:



CHAPTER VI STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

6.1 Internal Tree Plantation:

The College has well maintained Tree plantation.

Photograph of Tree Plantation:




PRINCIPAL
Sharadchandra Pawar Arts & Commerce College
Dudulgaon (Alandi), Pune



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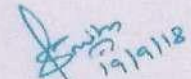
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- MEDA reserves the right to visit the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31st March 2021** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.


(Smita Kudarikar)
General Manager (EC)





Enrich Consultants

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Tel: 09890444795 Email: enrichcons@gmail.com

Ref: EC/SGMSPMSPACC/19-20/01

Date: 12/8/2020

CERTIFICATE

This is to certify that we have conducted Energy Audit at Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College, Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune - 412105 in the year 2019-20.

The College has adopted following Energy Efficient Practices:

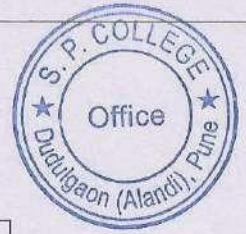
- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

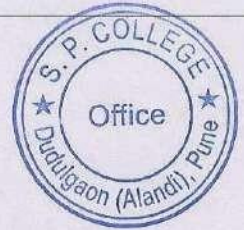




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ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College, Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune-412105, for awarding us the assignment of Energy Audit of their Dudulgaon campus for the Year: 19-20.

We are thankful to all staff members for helping us during the field study.





EXECUTIVE SUMMARY

1. Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College, Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune 412105 consumes Energy in the form of **Electrical Energy**; used for various gadgets, Office & other facilities.

2. Energy Consumed & CO₂ Emission:

No	Parameter	Energy Consumed, kWh	CO ₂ emissions, MT
1	Total	12133	10.92
2	Maximum	1238	1.11
3	Minimum	803	0.72
4	Average	1011.08	0.91

3. Various Measures Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting

4. Usage of Alternate Energy Source:

- The College has yet to install Roof Top Solar PV Plant.
- The % of Annual Power requirement met by Alternate Energy is nil

5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is **1.672 kW**.
- The Total Lighting Load is **2.072 kW**.
- The percentage of LED Lighting Total Lighting load works out to be **81 %**

6. Assumption:

- 1 kWh (Unit) of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere

7. Reference:

- For CO₂ Emission Calculations: www.tatapower.com





ABBREVIATIONS

AC	: Air conditioner
SGMSPM	: Shri Gajanan Maharaj Shikshan Prasarak Mandal
BEE	: Bureau of Energy Efficiency
CFL	: Compact Fluorescent Lamp
FTL	: Fluorescent Tube Light
LED	: Light Emitting Diode
kWh	: kilo-Watt Hour
Qty	: Quantity
W	: Watt
kW	: Kilo Watt
PC	: Personal Computer
MT	: Metric Ton
MSEDCL	: Maharashtra State Electricity Distribution Company Limited





CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study Connected Load and Present Energy Consumption
2. To Study CO₂ emissions
3. To study Scope for usage of Alternate / Renewable Energy
4. To study usage of LED Lighting

1.2 Table No-1: General Details of College:

No	Head	Particulars
1	Name	Shri Gajanan Maharaj Shikshan Prasarak Mandal's Sharadchandra Pawar Arts and Commerce College
2	Address	Alandi Devachi (Dudulgaon), Tal. Khed, Dist. Pune 412 105
3	Year of Establishment	2002
3	Affiliation	Savitribai Phule Pune University





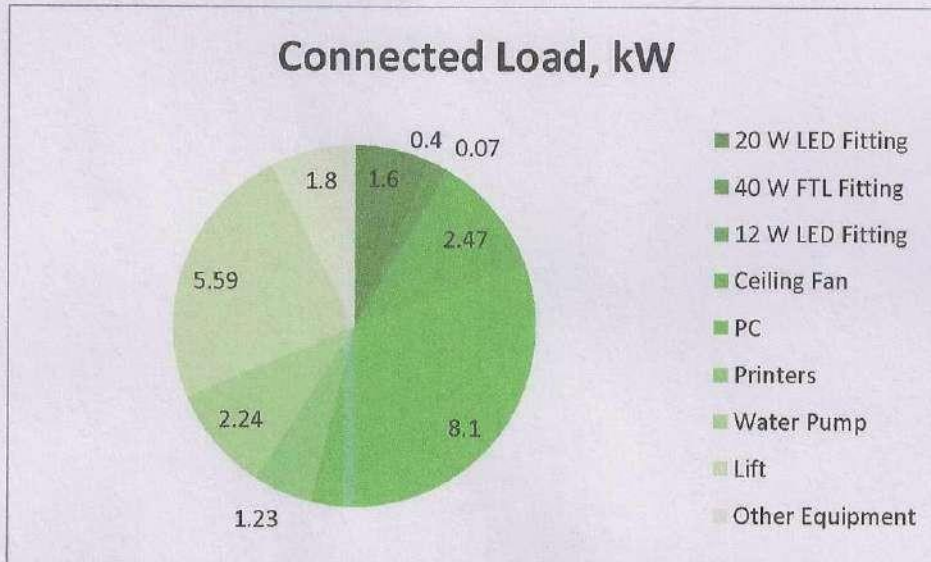
CHAPTER-II STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	20 W LED Fitting	80	20	1.6
2	40 W FTL Fitting	10	40	0.4
3	12 W LED Fitting	6	12	0.07
4	Ceiling Fan	38	65	2.47
5	PC	54	150	8.1
6	Printers	7	175	1.23
7	Water Pump	1	2238	2.24
8	Lift	1	5595	5.60
9	Other Equipment	9	200	1.8
10	Total			24

Chart No 1: Details of Connected Load:





CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumed
Table No 3: Electrical Energy Consumed: 19-20:

No	Month	Energy Consumed, kWh
1	Apr-19	960
2	May-19	901
3	Jun-19	803
4	Jul-19	840
5	Aug-19	961
6	Sep-19	966
7	Oct-19	1238
8	Nov-19	1043
9	Dec-19	1022
10	Jan-20	1013
11	Feb-20	1193
12	Mar-20	1193
13	Total	12133
14	Maximum	1238
15	Minimum	803
16	Average	1011.08

Chart No 2: To study the variation of Month wise Energy Consumed, kWh:

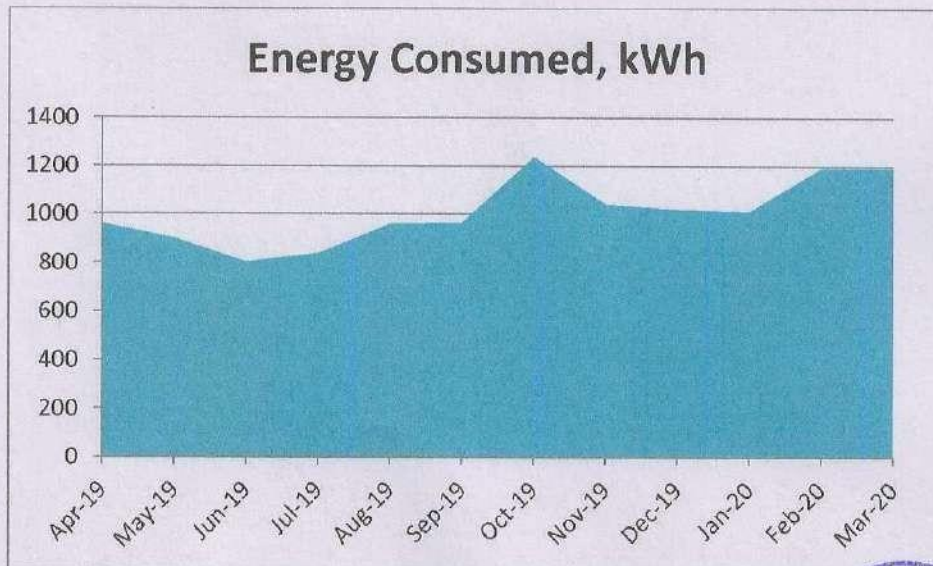




Table No 4: Important parameters:

No	Parameter	Energy Consumed, kWh
1	Total	12133
2	Maximum	1238
3	Minimum	803
4	Average	1011.08





CHAPTER-IV CARBON FOOT PRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities

The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions:

The basis of Calculation for CO₂ emissions due to Electrical Energy are: 1 Unit (kWh) of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 5: Month wise CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-19	960	0.86
2	May-19	901	0.81
3	Jun-19	803	0.72
4	Jul-19	840	0.76
5	Aug-19	961	0.86
6	Sep-19	966	0.87
7	Oct-19	1238	1.11
8	Nov-19	1043	0.94
9	Dec-19	1022	0.92
10	Jan-20	1013	0.91
11	Feb-20	1193	1.07
12	Mar-20	1193	1.07
13	Total	12133	10.92
14	Maximum	1238	1.11
15	Minimum	803	0.72
16	Average	1011.08	0.91



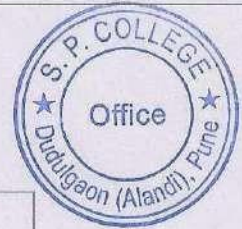


Chart No 3: Representation of Month wise CO₂ Emissions:

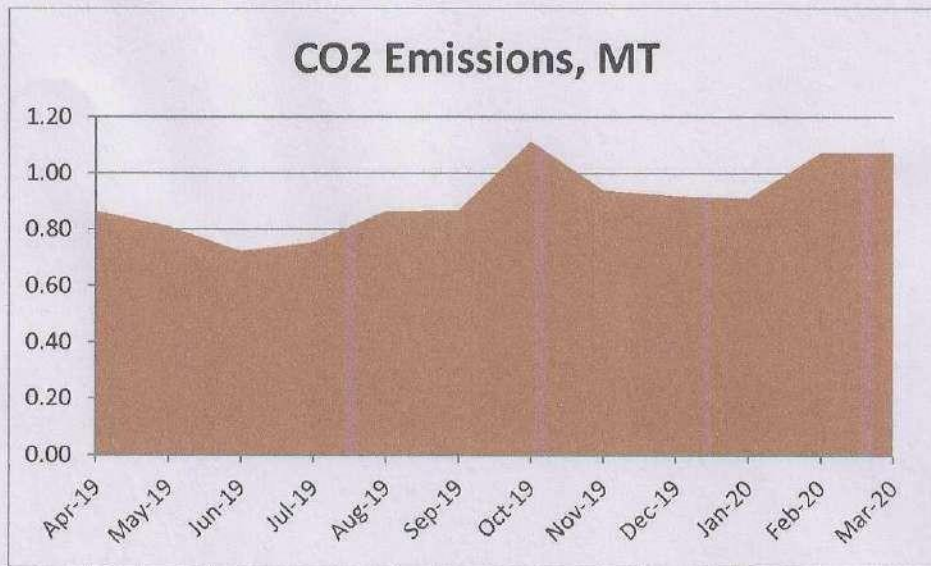


Table No 6: Key observations:

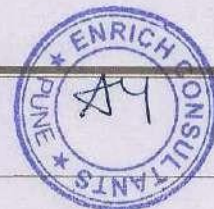
No	Parameter	Energy consumed, kWh	CO ₂ Emissions, MT
1	Total	12133	10.92
2	Maximum	1238	1.11
3	Minimum	803	0.72
4	Average	1011.08	0.91





CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

- The College has yet to install Roof top Solar PV Plant.
- As on Date the percentage of Annual Power requirement by Alternate Energy is nil.



CHAPTER-VI STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of usage of LED lights to Total Lighting Load.

Table No 7: Study of % LED Lighting Load to Total Lighting Load:

No	Particulars	Value	Unit
1	Qty of 20 W LED Fittings	80	Nos
2	Load per Unit of 20 W LED Fitting	20	W/Unit
3	Total Load of 20 W LED Fittings	1.6	kW
4	Qty of 40 W FTL Fittings	10	Nos
5	Load per Unit of 40 W FTL Fitting	40	W/Unit
6	Total Load of 40 W FTL Fittings	0.4	kW
7	Qty of 12 W LED Fittings	6	Nos
8	Load per Unit of 12 W LED Fitting	12	W/Unit
9	Total Load of 12 W LED Fittings	0.072	kW
10	Total LED Lighting Load=3+6	1.672	kW
11	Total Lighting Load=3+6+9	2.072	kW
12	% of Total Lighting Load met by LEDs= $10 \times 100 / 11$	81	%



Qinad
PRINCIPAL
Sharadchandra Pawar Arts & Commerce College
Dudulgaon (Alandi), Pune

