PowerTech Energy Solutions
Conserve to Consume

Energy & Green Audit Report
Of
Akole Taluka Education Society's
Technical Campus, Akole.

Submitted By

PowerTech Energy Solutions

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ENERGY & GREEN AUDIT COMPLETION CERTIFICATE

This is to certify that following facility has carried out Energy & Green Audit for the academic year of 2021-22 as per guidelines laid down in The Energy Conservation Act, 2001 in the month of June 2023

Name of the Installation	Akole Taluka Education Society's Technical Campus, Akole.
Details of Facilities Audited	Main college building including laboratories, libraries, Classroom etc.
Date of Energy and Green Audit	29 June 2023
Name of Certified Energy Auditor	Mr. Swapnil Gaikwad
Certification No.	EA 20121
Empanelment No (With Maharashtra Energy Development Agency, Govt. of Maharashtra)	MEDA/ECN/2022-23/ Class- A/EA-31
Validity of the Certificate	28 June 2024

Authorised Signatory

Digitally signed by ATUL SHARAD KAKAD
Date: 2023.06.09 17:38:38 +05'30'

Atul S Kakad

PowerTech Energy Solutions

Our Certificates

BEE Certified Energy Auditor Certificate

Regn. No. EA-20121

Certificate No. 8299

National Productivity Council

(National Certifying Agency)

PROVISIONAL CERTIFICATE

This is to certify that Mr. / Mrs./ Ms. Swapnil Sanjay Gaikwad

son / daughter of Mr. Sanjay J. Gaikwad

has passed the National Certification Examination for Energy Auditors held in August - 2014, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India.

He / She is qualified as Certified Energy Manager as well as Certified Energy Auditor.

He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment of qualifications for the Accredited Energy Auditor and issue of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act.

This certificate is valid till the issuance of an official certificate by the Bureau of Energy Efficiency.

Place : Chennai, India

Date : 9th January, 2015

Controller of Examination

Lead Auditor Certificate – ISO 50001: Energy Management System

TÜV NORD

PR366: ISO 50001:2018 Lead Auditor (Energy Management System) Training Course

Certificate of Achievement

Atul Kakad

has successfully completed the above mentioned course and examination.

26th - 30th November 2019

PUNE, INDIA

Certificate No. 35258395 07

Delegate No. 222777

for TÜV NORD CERT GmbH

Essen, 2020-01-08

The course is certified by CQI and IRCA (Certification No. 2088). The learner meets the training requirements for those seeking certification under the IRCA EnMS Auditor certification scheme.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com

CQI | IRCA

CERTIFIED COURSE

MEDA Registration Certificate

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency

(A Government of Maharashtra undertaking)
Aundh Road, Opposite Spicer College,
Near Commissionerate of Animal Husbandry, Aundh, Pune – 411 067
Ph No: 020-26614393/266144403
Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-44/3803 — 4th October, 2022

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	:	M/s PowerTech Energy Solutions Office No. 10, B-wing, 3rd floor, Phuge Prima, Bhosari Dighi Road Bhosari, Pimpri Chinchwad- 411 039.
Registration Category	:	*Empanelled Consultant for Energy Conservation Programme for Class 'A'*
Registration Number	:	***MEDA/ECN/2022-23/Class - A/EA-31***

- 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 at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **3rd October, 2024** 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.

General Manager (EC)

1 Executive Summary – Energy Audit

ECM	Area	Observations	Proposed Action	Estimated Monthly Energy Saving	Estimated Monthly CO2 Emission Reduction	Estimated Monthly Monetary Savings	Estimated Investment	Payback Period
				kWh	**Tones**	**Rs. Lakh**	**Rs. Lakh**	**Months**
ECM-1	**Lighting**	Some of the lighting fixtures in the College building include CFLs and fluorescent tube lights, which are present in the Classroom, Faculty Room, Tutorial Room, Seminar Hall, and Library,etc.	The conventional lighting fixtures, such as CFLs and fluorescent tube lights, should be replaced with energy-efficient LED lighting system.	184	0.1	0.02	0.18	7
ECM-2	**Fan**	At present, conventional ceiling fans of 70W are installed in Class Room, Tutorial Room, Staff Room, Seminar Hall,etc.	New energy efficient fans are available in the market which deliver same air volume at less power consumption It is recommended to replace existing 70W ceiling fans with new energy efficient 40W BLDC fan	415	0.3	0.67	2.52	45
Total				**599**	**0.5**	**0.69**	**3**	**53**
Monthly Energy Consumption of the Akole Taluka Education Society(kWh)				**7000**				
% Saving on Energy Usage				**8.6%**				
Monthly Energy Bill of the Akole Taluka Education Society (Rs. In Lakhs)				**5.2**				
% Savings on Energy Bill				**13.4%**				

2 Executive Summary – Green Audit

Sr.No	Area	Observations	Remark
1	Tree Plantation and Awareness about Energy Conservation	College has carried out tree plantation activity. Several types of trees have been planted by students and staffs	Good initiative taken by college toward green campus
2	Use of renewable energy – Solar PV system for power generation & Solar water heating system	Solar PV system of 9 kW has been installed by college to generate the electricity from solar energy. It helps to reduce 90 tons of CO_2 emission annually	Good initiative taken by college towards use of renewable energy

3 Scope of Improvement

3.1 Vermicomposting Plant

The college has not taken the initiative to compost the daily solid waste by means of a vermicomposting plant.

Vermicomposting offers several advantages that make it a beneficial practice. Firstly, it provides a natural and nutrient-rich fertilizer known as vermicomposting, which enhances soil quality and promotes healthy plant growth. By utilizing vermicomposting, colleges can effectively manage daily solid waste, reducing the amount of waste sent to landfills and contributing to waste reduction efforts. Additionally, vermicomposting is a cost-effective solution compared to other waste management methods, as it utilizes organic waste materials and requires minimal equipment. From an environmental perspective, vermicomposting helps to reduce greenhouse gas emissions associated with landfilling and incineration, contributing to a healthier and more sustainable environment.

3.2 Liquid Waste Management

It seems that the college has not implemented a proper liquid waste management system. Liquid waste management is crucial for maintaining a clean and healthy environment. Implementing an effective liquid waste management system offers several benefits. Firstly, it helps prevent the contamination of water sources such as rivers, lakes, and groundwater, thereby safeguarding the ecosystem and protecting human health. Additionally, proper liquid waste management ensures compliance with environmental regulations and promotes sustainability. By treating and recycling liquid waste, colleges can conserve water resources and reduce their overall environmental footprint. Implementing measures like wastewater treatment and recycling systems can also serve as educational opportunities for students to learn about sustainable water management practices. It is important for the college to recognize the importance of liquid waste management and take appropriate actions to address this issue.

3.3 E-Waste Management –

At present, there is no provision in campus to collect and dispose the of e-waste generated It is suggested that college shall dispose all e-waste to authorized E-waste collectors designated by Govt. authorities

Table Contents

4 Acknowledgement

PowerTech Energy Solutions extends gratitude Akole Taluka Education Society's Technical Campus, Akole for extending us the opportunity to conduct the Energy & Green Audit.

We are thankful to the professors & supporting staff of the college for their transparency & consistent support in sharing relevant information and for providing data about policies and projects along with their other valuable information. This report would have not been possible without their support.

The study team would like to acknowledge the following distinguished Akole Taluka Education Society's Technical Campus, Akole in person for the diligent involvement and cooperation.

Dr. B. B. Das	Director
Prashant Radhakrishna Tambe	Principal
Prashant Uagale	Assistant Professor

5 About College.

Akole Taluka Education Society is among the pioneer institutes in education established by Late Dadasaheb Rupwate and Honourable Madhukarrao Pichad along with hundreds of social workers in 1972. Doorstep facilities of education are very noble cause of social engineering, justice and equality. Leaders of all political parties in the region are assemble here and bound together to achieve optimal progress in education especially in the rural area. The facilities in this campus are stands at international quality norms.

The campus is offering courses of Management and Computer Application as a doorstep action for basically not only rural, semi-urban, urban beneficiaries but also international students.

The college is developing as a global Centre of Excellence in higher education, research and Technological Up gradation.
A residential campus for all Faculty Staff and Students with world class infrastructure. Lush green campus spread over 7.5 acres with 40% green area, and blossoming trees already planted.
Total built up campus area of 4481.46sq.fits. Well-equipped Library with a reading hall for 300 library users at a time, creating Knowledge Ledgers for tomorrow.
An Administrative Building and Auditorium Building for functional purposes.

OUR GOAL

1. Help to prepared educational professional recognized for the quality and significance of there teaching research scholarship service outreach and leadership
2. Provide widely recognized leadership in the improvement of teaching learning and the assessment of educational outcomes across the lifespan through research managerial process scholarship and technology
3. Provide leadership in the development of collaborative professional relationship with faculties organizations and other institutions focused on the improvement of education in faculties communities and work place settings

5.1 Mission

1. To bring professional education in the reach of rural & tribal students
2. To enrich the students by providing skills required to tune up with contemporary dynamic needs.
3. To become a Pioneer to bridge the gap between India & Bharat.
4. To empower students, Faculty & Society for contributing in overall progression of our Nation.

5.2 Vision

We, ATES Technical Campus is an Institute with a belief that "Be the Change, you want to see in the world"
we want to be a dynamic knowledge Hub through which we can transform rural & agricultural background students into Self-dependent Professionals & Entrepreneurs who will become the Change in the Society, generate employment & truly build The Unnat Bharat.

6 Energy Audit

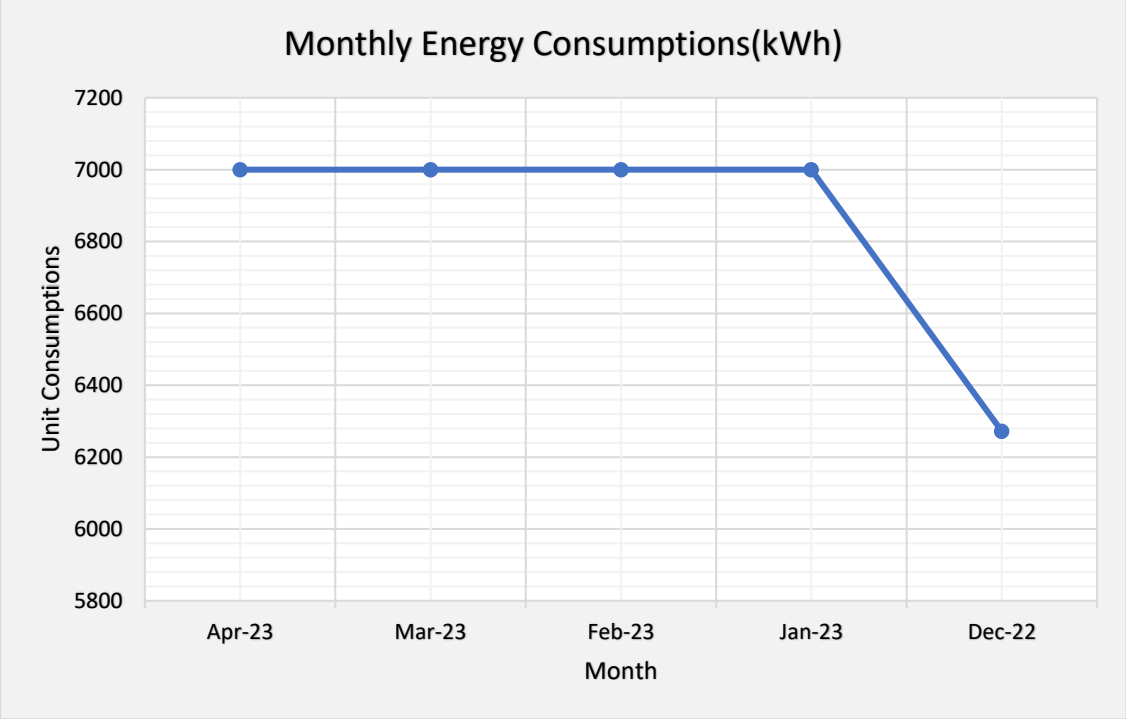
An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). In commercial and industrial real estate, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints.

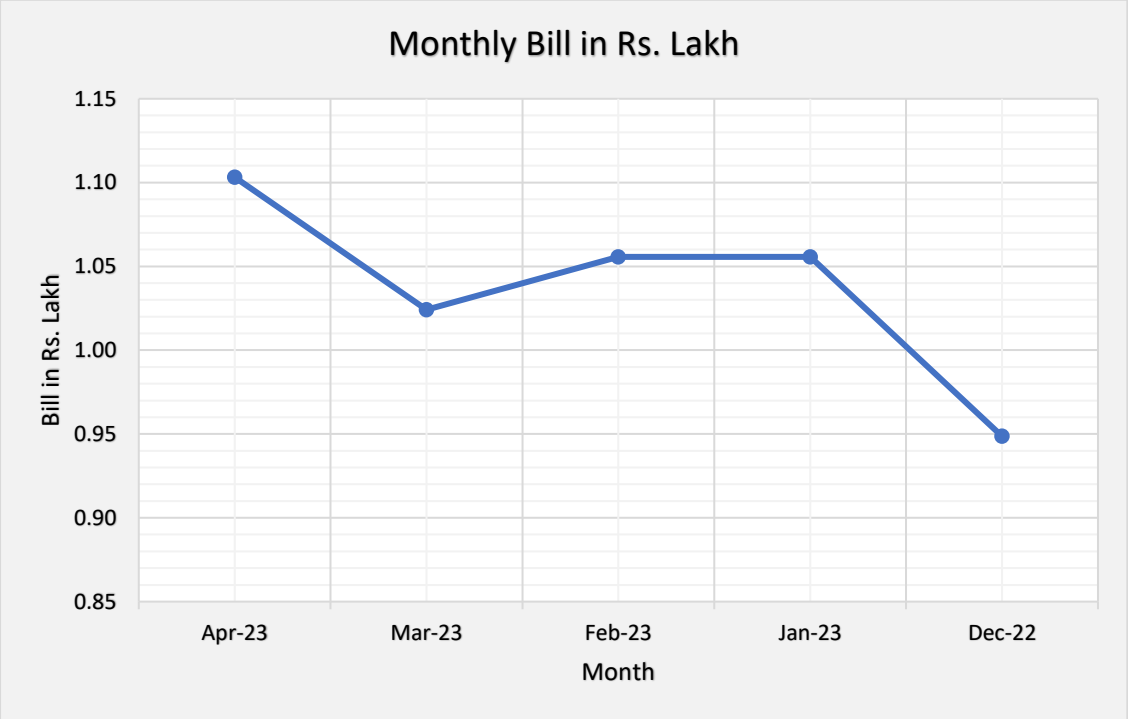
6.1 Electricity Bill Analysis

At present, one electricity meter is there for all campus. Bill analysis for the last 5 months below (Consumer number – **142680002877**)

Consumer Name	**THE DIRECTOR, AKOLE TALUKA EDUCATION SOCIET TEC**
Consumer Number	**142680002877**
Sanctioned Load	**100 kW**
Contract Demand (KVA)	**75 kVA**
Connected Load	**100 kW**
Tariff	**89 LT-VII B I**
Category	**Commercial**

Below graphs shows the monthly energy consumption,Bill amount etc.




Monthly Bill in Rs. Lakh
Bill in Rs. Lakh
1.15
1.10
1.05
1.00
0.95
0.90
0.85
Apr-23
Mar-23
Feb-23
Jan-23
Dec-22
Month

Month	Billed Demand	Unit Consumption (Commercial)	Demand Charges	Wheeling Charges @0.57/U	Energy Charges	Electricity Duty@21%	Tax On Sale@18 Ps/U	Total Current Bill	Total Current Bill	Avg. Unit Rate
	kVA	kWh	Rs	Rs	Rs	Rs	Rs	Rs	Rs.Lakh	Rs/kVAh
Apr-23	30	7000	12660	8190	68180	19179	1260	110319	1.10	13.98
Mar-23	30	7000	11520	9450	52430	17556	1260	102416	1.02	11.31
Feb-23	30	7000	11520	9450	52430	18102	1260	105562	1.06	11.75
Jan-23	30	7000	11520	9450	52430	18102	1260	105562	1.06	11.75
Dec-22	30	6272	11520	8467	46977	16200	1200	94864	0.95	11.60
Min	30	6272	11520	8190	46977	16200	1200	94864	0.95	11.31
Avg	30	6854	11748	9001	54489	17828	1248	103745	1.04	12.08
Max	30	7000	12660	9450	68180	19179	1260	110319	1.10	13.98
Total		34272	58740	45007	272447	89139	6240	518723	5.19	

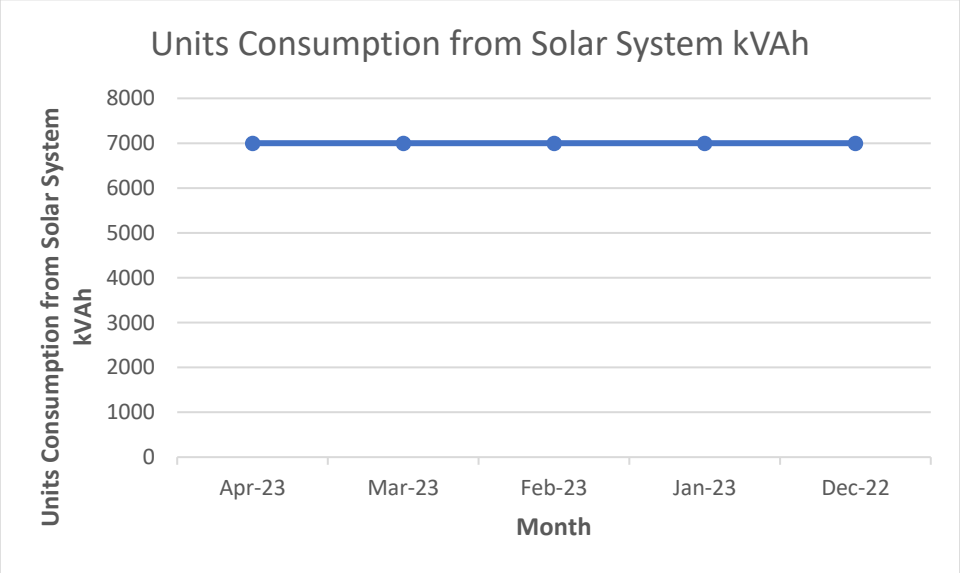
6.2 Observations& Remark

Sr.No.	Parameter	Observation	Remark
1	Contract Demand	Contract demand of the collage is 75 kVA	No action required
2	Sanctioned Load	Sanction load of the collage is 100 kW	No action required
3	Connected Load	Connected load of plant is 100 kW	No action required
4	Billed demand	Avg. billed demand recorded is 30 kVA	No action required
5	Unit consumption	Minimum unit consumption recorded is 6272 kWh in month of dec-22	No action required
		Avg. unit consumption recorded is 6854 Kwh	No action required
		Maximum unit consumption recorded is 7000 Kwh in month of march-23	No action required
6	Total bill	Avg. monthly electricity bill is 1 Rs Lakh	No action required

6.3 Generation from solar power plant.

Month	Total Solar Generation	TOD Solar Export	Units Consumption from Solar System	Solar % Use
	kVAh	kVAh	kVAh	%
Apr-23	0	0	7000	100%
Mar-23	0	0	7000	100%
Feb-23	0	0	7000	100%
Jan-23	0	0	7000	100%
Dec-22	0	0	7000	100%
Min	0	0	7000	100%
Avg	0	0	7000	100%
Max	0	0	7000	100%
Total	0	0	35000	

Below graphs shows the monthly energy consumption from solar power plant.



6.4 Connected Load

Name of the Space	Type of Load	Total Qty	Wattage	Load in Kw
Principle Cabin	LED Tube Light	1	20	0.02
Principle Cabin	FTL	3	36	0.11
Staff Room	LED Tube Light	1	20	0.02
Staff Room	FTL	2	36	0.07
Library	FTL	4	36	0.14
E- Library	FTL	4	36	0.14
Class Room -1	LED Tube Light	3	20	0.06
Class Room -1	FTL	3	36	0.11
Class Room -2	LED Tube Light	2	20	0.04
Class Room -2	FTL	2	36	0.07
Class Room- 3	FTL	2	36	0.07
Computer Lab -1	FTL	9	36	0.32
Computer Lab -2	LED Tube Light	2	20	0.04
Computer Lab -2	FTL	7	36	0.25
Computer Lab -3	FTL	6	36	0.22
Lunch Room	FTL	2	36	0.07
M.C.A . Staff Room	LED Tube Light	1	20	0.02
M.C.A . Staff Room	FTL	3	36	0.11
Server Room	FTL	1	36	0.04
Seminar Hall	FTL	5	36	0.18
Administrative Office	LED Tube Light	4	20	0.08
Administrative Office	FTL	1	36	0.04
Pantry	LED Tube Light	1	20	0.02
Board Room	FTL	2	36	0.07
Exam Room	LED Tube Light	1	20	0.02
Exam Room	FTL	1	36	0.04
Girls Common room	LED Tube Light	3	20	0.06
Girls Common room	FTL	2	36	0.07
Stores Room	FTL	1	36	0.04
Board Room Toilet	LED Bulb	1	20	0.02
Premises	LED Mercury	2	24	0.05
Principle Cabin	Ceiling fan	1	70	0.07
Staff Room	Ceiling fan	4	70	0.28
Library	Ceiling fan	5	70	0.35
E- Library	Ceiling fan	4	70	0.28
Class Room -1	Ceiling fan	6	70	0.42
Class Room -2	Ceiling fan	7	70	0.49
Class Room- 3	Ceiling fan	5	70	0.35
Computer Lab -1	Ceiling fan	6	70	0.42
Computer Lab -2	Ceiling fan	6	70	0.42
Computer Lab -3	Ceiling fan	3	70	0.21
Lunch Room	Ceiling fan	2	70	0.14
M.C.A . Staff Room	Ceiling fan	3	70	0.21
Server Room	Ceiling fan	1	70	0.07
Seminar Hall	Ceiling fan	6	70	0.42
Administrative Office	Ceiling fan	5	70	0.35
Pantry	Ceiling fan	1	70	0.07
Board Room	Ceiling fan	1	70	0.07
Exam Room	Ceiling fan	1	70	0.07
Girls Common room	Ceiling fan	5	70	0.35
Total		**154**	**2258**	**8**

6.5 Energy Saving Measure 1 – Replacement of conventional light with energy efficient LED Light

It has been observed that conventional lights are used at different areas in college. It is recommended to replace existing conventional lighting fixtures, such as fluorescent tube lights should be replaced with 20W LED lighting system. Below table shows the estimated energy and monetary saving along with payback period.

Location	Light Type	Qty	W	Lighting Load Kw	Hours of usage	No of Days in a month	Daily (kWh)	Monthly (kWh)	New W	New load kW	New monthly kWh	Monthly energy saving in kWh	Monthly monetary saving in Rs	Unit Rate of Light Fitting (Rs.)	Investment Rs	Payback period in months
Principle Cabin	LED Tube Light	1	20	0.02	8.00	24.0	0.2	4								
Principle Cabin	FTL	3	36	0.11	8.00	24.0	0.9	21	20	0.06	12	9	124	300	900	7
Staff Room	LED Tube Light	1	20	0.02	8.00	24.0	0.2	4								
Staff Room	FTL	2	36	0.07	8.00	24.0	0.6	14	20	0.04	8	6	82	300	600	7
Library	FTL	4	36	0.14	8.00	24.0	1.2	28	20	0.08	15	12	165	300	1200	7
E- Library	FTL	4	36	0.14	8.00	24.0	1.2	28	20	0.08	15	12	165	300	1200	7
Class Room -1	LED Tube Light	3	20	0.06	8.00	24.0	0.5	12								
Class Room -1	FTL	3	36	0.11	8.00	24.0	0.9	21	20	0.06	12	9	124	300	900	7
Class Room -2	LED Tube Light	2	20	0.04	8.00	24.0	0.3	8								
Class Room -2	FTL	2	36	0.07	8.00	24.0	0.6	14	20	0.04	8	6	82	300	600	7
Class Room- 3	FTL	2	36	0.07	8.00	24.0	0.6	14	20	0.04	8	6	82	300	600	7
Computer Lab -1	FTL	9	36	0.32	8.00	24.0	2.6	62	20	0.18	35	28	371	300	2700	7
Computer Lab -2	LED Tube Light	2	20	0.04	8.00	24.0	0.3	8								
Computer Lab -2	FTL	7	36	0.25	8.00	24.0	2.0	48	20	0.14	27	22	289	300	2100	7
Computer Lab -3	FTL	6	36	0.22	8.00	24.0	1.7	41	20	0.12	23	18	247	300	1800	7
Lunch Room	FTL	2	36	0.07	8.00	24.0	0.6	14	20	0.04	8	6	82	300	600	7

Location	Light Type	Qty	W	Lighting Load Kw	Hours of usage	No of Days in a month	Daily (kWh)	Monthly (kWh)	New W	New load kW	New monthly kWh	Monthly energy saving in kWh	Monthly monetary saving in Rs	Unit Rate of Light Fitting (Rs.)	Investment Rs	Payback period in months
M.C.A . Staff Room	LED Tube Light	1	20	0.02	8.00	24.0	0.2	4								
M.C.A . Staff Room	FTL	3	36	0.11	8.00	24.0	0.9	21	20	0.06	12	9	124	300	900	7
Server Room	FTL	1	36	0.04	8.00	24.0	0.3	7	20	0.02	4	3	41	300	300	7
Seminar Hall	FTL	5	36	0.18	8.00	24.0	1.4	35	20	0.10	19	15	206	300	1500	7
Administrative Office	LED Tube Light	4	20	0.08	8.00	24.0	0.6	15								
Administrative Office	FTL	1	36	0.04	8.00	24.0	0.3	7	20	0.02	4	3	41	300	300	7
Pantry	LED Tube Light	1	20	0.02	8.00	24.0	0.2	4								
Board Room	FTL	2	36	0.07	8.00	24.0	0.6	14	20	0.04	8	6	82	300	600	7
Exam Room	LED Tube Light	1	20	0.02	8.00	24.0	0.2	4								
Exam Room	FTL	1	36	0.04	8.00	24.0	0.3	7	20	0.02	4	3	41	300	300	7
Girls Common room	LED Tube Light	3	20	0.06	8.00	24.0	0.5	12								
Girls Common room	FTL	2	36	0.07	8.00	24.0	0.6	14	20	0.04	8	6	82	300	600	7
Stores Room	FTL	1	36	0.04	8.00	24.0	0.3	7	20	0.02	4	3	41	300	300	7
Board Room Toilet	LED Bulb	1	20	0.02	8.00	24.0	0.2	4								
Premises	LED Mercury	2	24	0.05	8.00	24.0	0.4	9								
		82		**3**			**21**	**501**		**1**	**230**	**184**	**2473**		**18000**	**7**

Energy Saving in Light Replacement		
Parameter	**Unit**	**Value**
Total no. of conventional lighting fixtures installed	No's	60
Estimated Monthly energy saving	kWh	184
Estimated Monthly carbon emission reduction	Tones	0.15
Estimated Monthly monetary saving	Rs	2473
Estimated investment	Rs	18000
Payback period	**Month**	**7**

6.6 Observation & Remark

Sr. No.	Area	Observation	Remark
1	Akole Taluka Education Society	Some of the lighting fixtures in the College Building include fluorescent tube lights, which are present in the Classroom, Faculty Room, Tutorial Room, Seminar Hall, and Library. There are total 82 no. of lighting fixtures installed Total lighting load is 3 kW Monthly energy consumption of lighting is 184 units	The conventional lighting fixtures, such as CFLs and fluorescent tube lights, should be replaced with energy-efficient LED lighting system.

6.7 Energy Saving Measure 2 – Replacement of conventional ceiling fans with energy-efficient ceiling fans

It has been observed that conventional ceilings fans are used at different areas in college. It is recommended to replace existing 70W ceiling fans with 40W energy efficient fans. Below table shows the estimated energy and monetary saving along with payback period.

Location	Fan Type	Qty	W	Load in Kw	Hours of Usage	No. of Days in Month	Daily Consumption (kWh)	Monthly Consumption (kWh)	New Wattage	New kW	New Monthly kWh	Energy Saving in kWh	Monetary saving in Rs	Investment	Payback period in months
Principle Cabin	Ceiling fan	1	70	0.07	8	24	0.6	13.4	40	0.04	8	5.8	77	3500	45
Staff Room	Ceiling fan	4	70	0.28	8	24	2.2	53.8	40	0.16	31	23.0	309	14000	45
Library	Ceiling fan	5	70	0.35	8	24	2.8	67.2	40	0.20	38	28.8	386	17500	45
E- Library	Ceiling fan	4	70	0.28	8	24	2.2	53.8	40	0.16	31	23.0	309	14000	45
Class Room -1	Ceiling fan	6	70	0.42	8	24	3.4	80.6	40	0.24	46	34.6	464	21000	45
Class Room -2	Ceiling fan	7	70	0.49	8	24	3.9	94.1	40	0.28	54	40.3	541	24500	45
Class Room- 3	Ceiling fan	5	70	0.35	8	24	2.8	67.2	40	0.20	38	28.8	386	17500	45
Computer Lab -1	Ceiling fan	6	70	0.42	8	24	3.4	80.6	40	0.24	46	34.6	464	21000	45
Computer Lab -2	Ceiling fan	6	70	0.42	8	24	3.4	80.6	40	0.24	46	34.6	464	21000	45
Computer Lab -3	Ceiling fan	3	70	0.21	8	24	1.7	40.3	40	0.12	23	17.3	232	10500	45
Lunch Room	Ceiling fan	2	70	0.14	8	24	1.1	26.9	40	0.08	15	11.5	155	7000	45
M.C.A . Staff Room	Ceiling fan	3	70	0.21	8	24	1.7	40.3	40	0.12	23	17.3	232	10500	45
Server Room	Ceiling fan	1	70	0.07	8	24	0.6	13.4	40	0.04	8	5.8	77	3500	45
Seminar Hall	Ceiling fan	6	70	0.42	8	24	3.4	80.6	40	0.24	46	34.6	464	21000	45
Administrative Office	Ceiling fan	5	70	0.35	8	24	2.8	67.2	40	0.20	38	28.8	386	17500	45
Pantry	Ceiling fan	1	70	0.07	8	24	0.6	13.4	40	0.04	8	5.8	77	3500	45
Board Room	Ceiling fan	1	70	0.07	8	24	0.6	13.4	40	0.04	8	5.8	77	3500	45
Exam Room	Ceiling fan	1	70	0.07	8	24	0.6	13.4	40	0.04	8	5.8	77	3500	45
Girls Common room	Ceiling fan	5	70	0.35	8	24	2.8	67.2	40	0.20	38	28.8	386	17500	45
Total		**72**		**5**			**40**	**968**	**760**	**3**	**553**	**415**	**5,565**	**252,000**	**45**

6.8 Observation & Remark

Sr.No	Area	Observation	Remark
1	Ceiling Fans	At present, conventional ceiling fans of 70W is installed in Class Room, Tutorial Room, Staff Room, Seminar Hall. There are total 72 no. of ceilings fans installed Total ceiling fan load is 5 kW	New energy efficient fans are available in the market which deliver same air volume at less power consumption It is recommended to replace existing 70 ceiling fans with new energy efficient 40W BLDC fan Estimated new load of fan is 3 kW Estimated annual energy saving is 4977 units Estimated annual carbon emission reduction is 4 Tones Estimated annual monetary saving is Rs.0.66 Lakh Estimated investment is Rs.2.52 Lakh Payback period is 45 months

Fan Recommendation 1

Replace existing 70-watt conventional ceiling fans with 40-watt energy efficient fans

Parameter	Unit	Value
Present fan type		Conventioanal ceiling fan
Present wattage of ceiling fans	watt	70
Total no.of fans installed	Nos.	72
Present load of ceiling fans	kW	5
Present monthly energy consumption of ceiling fans	kWh	760
Recommended fan type		Energy Efficient BLDC fan
New Estimated wattage of fan	watt	40
Estimated load of ceiling fan	kW	3
Power saving	kW	2
% Savings	%	43%
New Estimated monthly energy consumption	kWh	553
Estimated annual energy savings	kWh	4977
Estimated annual carbon emission reduction	Tons	4.0
Estimated annual monetary savings	Rs	66,780
Estimated investment for 1 fan	Rs	3500
Estimated total investment	Rs	252,000
Payback period	Months	45

Requirements of NAAC

6.9 Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources
= (Power requirement met by renewable energy sources / Total power requirement) X 100

= (35000/35000) X 100

= 100%

Reference data is shown below

Month	Total Solar Generation	TOD Solar Export	Units Consumption from Solar System	Solar % Use
	kVAh	kVAh	kVAh	
Apr-23	0	0	7000	100%
Mar-23	0	0	7000	100%
Feb-23	0	0	7000	100%
Jan-23	0	0	7000	100%
Dec-22	0	0	7000	100%
Min	0	0	7000	100%
Avg	0	0	7000	100%
Max	0	0	7000	100%
Total	0	0	35000	

6.10 Percentage of lighting power requirement met through LED bulbs

= (Lighting power requirement met through LED bulbs / Total lighting power requirement) X 100

= (1/3) X 100

= 33.3 %

7 Green Audit

Green audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It exposes the authenticity of the proclamations made by multinational companies, armies and national governments with the concern of health issues as the consequences of environmental pollution. It is the duty of organizations to carry out the Green Audits of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulations, to improve the procedures and ability of materials, to analyze the potential duties and to determine a way which can lower the cost and add to the revenue. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. Some of the incidents like Bhopal Gas Tragedy (Bhopal; 1984), Chernobyl Catastrophe (Ukraine; 1986) and Exxon-Valdez Oil Spill (Alaska; 1989) have cautioned the industries that setting corporate strategies for environmental security elements have no meaning until they are implemented.

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade a, Grade B or Grade C according to the scores assigned at the time of accreditation.

The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and other organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmentally friendly institute.

7.1 Goals of Green Audit

- The objective of carrying out Green Audit is securing the environment and cut down the threats posed to human health.
- To make sure that rules and regulations are taken care of
- To avoid the interruptions in environment that are more difficult to handle and their correction requires high cost.
- To suggest the best protocols for adding to sustainable development

7.2 Benefits of Green Audit

- It would help to shield the environment
- Recognize the cost saving methods through waste minimizing and managing
- Point out the prevailing and forthcoming complications
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- It portrays a good image of a company which helps building better relationships with the group of stakeholders
- Enhance the alertness for environmental guidelines and duties

8 Initiatives by College towards Sustainable Environment

8.1 Tree Plantation

Tree-planting is the process of transplanting tree seedlings, generally for forestry, land reclamation, or landscaping purpose. It differs from the transplantation of larger trees in arboriculture, and from the lower cost but slower and less reliable distribution of tree seeds.


Technical Campus, Akole.
by AICTE,DTE.Affiliated to SPPU,Pune.


AKOLE TALU

9 Use of renewable energy

9.1 Use of Solar PV System for Power Generation

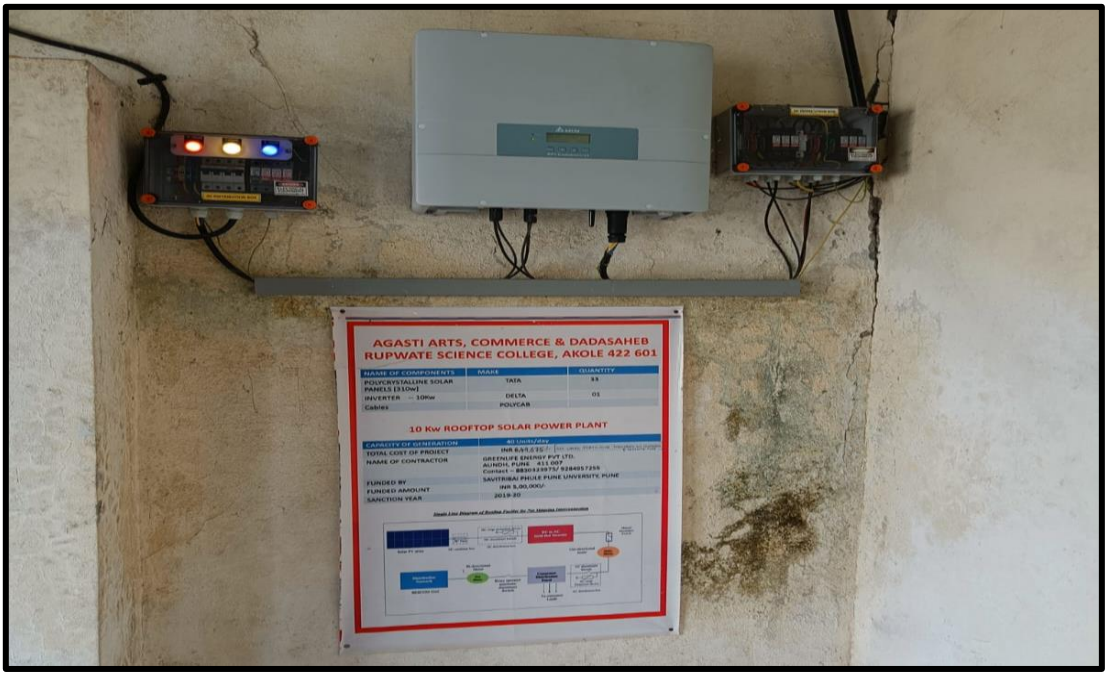
The college has taken an eco-friendly initiative by installing a 10-kW solar PV (photovoltaic) plant on its premises. This plant harnesses solar energy from the sun and converts it into usable electricity that can be utilized by the college.

The solar panels of the plant are mounted on the rooftop of the building in a manner that maximizes their exposure to sunlight. The panels are connected to an inverter that converts the direct current (DC) electricity produced by the panels into alternating current (AC) electricity, which can be used to power the college's electrical appliances and equipment.

The 9-kW solar PV plant generates a significant amount of electricity that helps to reduce the college's reliance on traditional sources of electricity, such as coal and natural gas. This, in turn, helps to reduce carbon emissions and promote sustainability.

Overall, the installation of the 10-kW solar PV plant is a positive step towards creating a more sustainable and eco-friendly future.

Following are some actual images of installed solar PV plant.


AGASTI ARTS, COMMERCE & DADASAHEB
RUPWATE SCIENCE COLLEGE, AKOLE 422 601
NAME OF COMPONENTS
MAKE
QUANTITY
POLYCRYSTALLINE SOLAR PANELS (310w)
TATA
33
INVERTER – 10Kw
DELTA
01
Cables
POLYCAB
10 Kw ROOFTOP SOLAR POWER PLANT
CAPACITY OF GENERATION
40 Units/day
TOTAL COST OF PROJECT
NAME OF CONTRACTOR
GREENLIFE ENERGY PVT LTD.
AUNDH, PUNE - 411 007.
FUNDED BY
SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE
FUNDED AMOUNT
SANCTION YEAR
2019-20