DTE Institute Code : 6217

Shri Balasaheb Mane Shikshan Prasarak Mandal's

ASHOKRAO MANE GROUP OF INSTITUTIONS

Address : Vathar Tarf Vadgaon, Tal. Hatkanangale, Dist. Kolhapur - 416 112 (Maharashtra)

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Approved by : AICTE, New Delhi No. F-No. MS (NewInt) 2009 / 08, Higher & Technical Education Department, Govt. of Maharashtra, Directorate of Technical Education, Mumbai. Affiliated to : Dr. Babasaheb Ambedkar Technological University, Lonere - Raigad. (B.Tech. & M.Tech. Programs), Shivaji University, Kolhapur. (MBA Program).

Estd 2009

Accredited by NAAC with 'A' Grade CGPA 3.08

1243

Ref. No. : AMGOI/Electeical Dept/2021-22/2215

Date : 06/04/2022

To

The Principle,

Dahiwadi College, Dahiwadi.

Taluka: - Man, Dist: - Satara,

Pin Code: 415508.

Subject: Energy audit report of your college.

Respected sir,

As per the mentioned subject, we have completed the Energy audit, of Dahiwadi College, Dahiwadi Taluka-Man, Dist-Satara. We are submitting the Energy audit, reports of year 2021-22 for your kind reference and necessary action.

Kindly requested you to acknowledge the same. Also, we request you to pay Rs.5000 +18% GST extra (i.e Rs 5900/-including GST) towards these report consultancy fee in the form of DD/ Cheque in favor of **"Ashokrao Mane Group of Institutions".** Looking forward to your interaction with our department in future for the assistance.

SHRI BALASAHEB MANE SHIKSHAN PRASARAK MANDAL'S ASHOKRAO MANE GROUP OF INSTITUTIONS Tal. Hatkanangale Dist. Kolhapur Vathar Tarf Vadgaon

Dr.H.T.Jadhav
Director, AMGOI,Vathar
Certified Energy Auditor (BEE)
Govt. of India, Reg.No.-EA-3023

Energy Audit Report

of

Dahiwadi College Dahiwadi

Energy Audit Report

Client Name	**Dahiwadi College Dahiwadi** **Dahiwadi - 415508,** **Tal-Man, Dist - Satara, (Maharashtra)**
Project Name	**Dahiwadi College Dahiwadi** **Dahiwadi - 415508,** **Tal-Man, Dist - Satara, (Maharashtra)**
Date	Year 2021-22.
Submitted by	**Ashokrao Mane Group of Institutions** Vathar Tarf Vadgaon, Tal- Hatkanangale, Dist.-Kolhapur (Maharashtra state),

DISCLAIMER

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ACKNOWLEDGEMENT

We appreciate the interest and participation of Honorable Management and Principal and Faculty in carrying out the energy audit at **Dahiwadi College Dahiwadi Tal-Man, Dist - Satara, (Maharashtra)** Our special thanks to Technicians and Staff involved for college who have extended their co-operation and courtesy to the energy audit team during the audit.

THE ENERGY AUDIT TEAM

Team Member	Dr. H.T. Jadhav Certified Energy Auditor Bureau of Energy Efficiency Director AMGOI, Vathar Tarf Vadgaon. Mr.R.S.Pukale Assistant Professor AMGOI, Vathar Tarf Vadgaon.

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3	Summary of analysis of current energy Scenario	14
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5	Methodology of the Audit	28
6	Conclusion and General Recommendations of the Audit	29

1. EXECUTIV1E SUMMARY (Lighting Load):

Meter. No	Recommendations	Monthly present expenditure in Rs.	Investment for the saving of expenditure in Rs.	Savings per month in Rs.	Payback period in years.
Meter no: -1 Three phase supply (204010013121)	Replace 22W CFL bulb by LED bulb (25no). Replace 40W tube light by energy efficient tub light (20 no). Replace 80W old fan by energy efficient fan (22 no).	R.s. 4478.4	12 W LED bulb-8055 (45 no. LED) 35 W Fan – 69800 (22 No. fan) Total=77855	Cost of energy Rs. 2027.88 Saving=Rs. 4478.4 -Rs. 2027.88 = Rs.2450.52	2.7 yrs.
Meter no: -2 Three phase supply (204010014721**)**	Replace 22W CFL bulb by LED bulb (18 no). Replace 40W tube light by energy efficient tub light (17 no). Replace 80W old fan by energy efficient fan (18 no).	Rs. 3894.768	12 W LED bulb-6265 (35 no. LED) 35 W Fan – 62820 (18 No. fan) Total=69085	Cost of energy Rs.1625.4 Saving=Rs.3894.768 -Rs. 1625.4 = Rs.2269.368	2.5yrs
Meter no: -3 Three phase supply (204010720731**)**	Replace 22W CFL bulb by LED bulb (10 no). Replace 40W tube light by energy efficient tub light (27 no). Replace 80W old fan by energy efficient fan (18 no).	Rs. 4241.52	12 W LED bulb-8771 (49 no. LED) 35 W Fan – 62820 (20 No. fan) Total=71591	Cost of energy Rs.1662.552 Saving=Rs.4241.52 -Rs. 1662.552 = Rs.2578.968	2.3yrs
Meter no: -4 Single phase supply (204010742174**)**	Replace 22W CFL bulb by LED bulb (18 no). Replace 40W tube light by energy efficient tub light (26 no). Replace 80W old fan by energy efficient fan (24 no).	Rs. 5195.088	12 W LED bulb-8592 (48 no. LED) 35 W Fan – 83760 (24 No. fan) Total=92352	Cost of energy Rs.2117.664 Saving=Rs. 5195.088-Rs. 2117.664 = Rs.3077.424	2.5 yrs.
Meter no: -5 Single phase supply (204010041320**)**	Replace 22W CFL bulb by LED bulb (27 no). Replace 40W tube light by energy efficient tub light (24no). Replace 80W old fan by energy efficient fan (22 no).	Rs. 6561.72	12 W LED bulb-8234 (46 no. LED) 35 W Fan – 76780 (22 No. fan) Total=85014	Cost of energy Rs. 2736.36 Saving=Rs. 6561.72 -Rs. 2736.36 = Rs.3825.36	1.9 yrs.

Meter no: -6 Three phase supply (204011037261**)**	Replace 22W CFL bulb by LED bulb (22 no). Replace 40W tube light by energy efficient tub light (29 no). Replace 80W old fan by energy efficient fan (22 no).	Rs. 6422.018	12 W LED bulb-9129 (51 no. LED) 35 W Fan – 76780 (22No. fan) Total=85909	Cost of energy Rs. 2503.998 Saving=Rs. 6422.018 -Rs. 2503.998 = Rs.3918.02	1.8 yrs.
Meter no: -7 Three phase supply (204011037270**)**	Replace 22W CFL bulb by LED bulb (12 no). Replace 40W tube light by energy efficient tub light (06 no). Replace 80W old fan by energy efficient fan (08 no).	Rs. 1803.859	12 W LED bulb-5012 (18 no. LED) 35 W Fan – 3490 (08 No. fan) Total=32932	Cost of energy Rs. 782.0928 Saving=Rs.1803.859 -Rs. 782.0928 = Rs.1021.7662	2.8 yrs.
Meter no: -8 Single phase supply (204013050389**)**	Replace 22W CFL bulb by LED bulb (01 no). Replace 40W tube light by energy efficient tub light (03 no). Replace 80W old fan by energy efficient fan (01 no).	Rs. 479.52	12 W LED bulb-716 (4 no. LED) 35 W Fan – 3490 (01 No. fan) Total=4206	Cost of energy Rs. 179.28 Saving=Rs. 479.52 -Rs. 179.28 = Rs.300.24	1.2 yrs.
Meter no: -9 Single phase supply (20401351164**)**	Replace 22W CFL bulb by LED bulb (05no). Replace 40W tube light by energy efficient tub light (01 no). Replace 80W old fan by energy efficient fan (2no).	Rs. 400.644	12 W LED bulb-1074 (06 no. LED) 35 W Fan – 6980 (02 No. fan) Total=8054	Cost of energy Rs. 183.5208 Saving=Rs. 400.644 -Rs. 183.5208 = Rs.217.12	3.1 yrs.
Meter no: -10 Single phase supply (204013051172**)**	Replace 22W CFL bulb by LED bulb (03no). Replace 40W tube light by energy efficient tub light (01 no). Replace 80W old fan by energy efficient fan (2no).	Rs. 343.7784	12 W LED bulb-716 (04 no. LED) 35 W Fan – 6980 (02 No. fan) Total= 7696	Cost of energy Rs. 152.5032 Saving=Rs. 343.7784 -Rs. 152.5032 = Rs.191.27	3.4 yrs.

1.1 Connected Load List

Consume number	Supply Type	CFL Bulb	No. of Tube light	No. of Fan	No of Computer	No of AC	T.V	refrigerator	water filter	stabilizer	Xerox machine
204010013121	Three Phase	25	20	22	31	5	1	1	1	2	3
204010014721	Three Phase	18	17	18	23	1	0	0	0	2	1
204010720731	Three Phase	10	27	18	46	0	0	0	0	2	0
204010742174	single Phase	18	26	24	2	0	0	0	0	1	0
204010041320	Three Phase	27	24	22	0	0	0	0	0	0	0
204011037261	Three Phase	6	29	22	5	4	0	0	0	0	1
204011037270	Three Phase	12	6	8	4	0	0	0	0	1	1
204013050389	single Phase	1	3	1	0	0	0	2	0	0	0
204013051164	single Phase	5	1	2	0	0	1	1	1	0	0
204013051172	single Phase	3	1	2	0	0	0	1	1	0	0

Consume number	Supply Type	Printer	lamination machine	flood light	lamination machine	Gas Geyser	Electric Motor	CCTV	Inverter
204010013121	Three Phase	7	1	1	0	1	1	0	1
204010014721	Three Phase	10	0	0	0	0	0	1	0
204010720731	Three Phase	6	0	0	1	0	1	0	0
204010742174	single Phase	1	0	0	0	0	0	0	0
204010041320	Three Phase	0	0	0	0	0	0	0	0
204011037261	Three Phase	2	0	1	0	0	1	0	1
204011037270	Three Phase	2	1	0	0	0	0	0	1
204013050389	single Phase	0	0	0	0	0	0	0	0
204013051164	single Phase	0	0	0	0	0	0	0	0
204013051172	single Phase	0	0	0	0	0	0	0	0

2. SUMMARY OF SAVINGS POTENTIAL

Meter no: -1 Three phase supply (204010013121)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	25	6	550	3300	3.3	Replace 22W CFL bulb by LED bulb (25no). Replace 40W tube light by energy efficient tub light (20 no). Replace 80W old fan by energy efficient fan (22 no).
2	Tube light	40	20	6	800	4800	4.8	
3	Fan	80	22	6	1760	10560	10.56	
4	Computer	300	31	6	9300	55800	55.8	
5	AC	1000	5	6	5000	30000	30	
6	T.V	80	1	6	80	480	0.48	
7	refrigerator	105	1	24	105	2520	2.52	
8	water filter	450	1	6	450	2700	2.7	
9	flood light	400	1	10	400	4000	4	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	1	4	746	2984	2.984	
				Total	**19191**	**117144**	**117.144**	

Meter no: -2 Three phase supply (204010014721)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	18	6	396	2376	2.376	Replace 22W CFL bulb by LED bulb (18 no). Replace 40W tube light by energy efficient tub light (17 no). Replace 80W old fan by energy efficient fan (18 no).
2	Tube light	40	17	6	680	4080	4.08	
3	Fan	80	18	6	1440	8640	8.64	
4	Computer	300	23	6	6900	41400	41.4	
5	AC	1000	1	6	1000	6000	6	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	0	24	0	0	0	
8	water filter	450	0	6	0	0	0	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	0	4	0	0	0	
				Total	**10416**	**62496**	**62.496**	

Meter no: -3 Three phase supply (204010720731)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	10	6	220	1320	1.32	Replace 22W CFL bulb by LED bulb (10 no). Replace 40W tube light by energy efficient tub light (27 no). Replace 80W old fan by energy efficient fan (18 no).
2	Tube light	40	27	6	1080	6480	6.48	
3	Fan	80	18	6	1440	8640	8.64	
4	Computer	300	46	6	13800	82800	82.8	
5	AC	1000	0	6	0	0	0	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	0	24	0	0	0	
8	water filter	450	0	6	0	0	0	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	1	4	746	2984	2.984	
				Total	**17286**	**102224**	**102.224**	

Meter no: -4 Single phase supply (204010742174)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	18	6	396	2376	2.376	Replace 22W CFL bulb by LED bulb (18 no). Replace 40W tube light by energy efficient tub light (26 no). Replace 80W old fan by energy efficient fan (24 no).
2	Tube light	40	26	6	1040	6240	6.24	
3	Fan	80	24	6	1920	11520	11.52	
4	Computer	300	2	6	600	3600	3.6	
5	AC	1000	0	6	0	0	0	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	0	24	0	0	0	
8	water filter	450	0	6	0	0	0	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	0	4	0	0	0	
				Total	**3956**	**23736**	**23.736**	

Meter no: -5 Single phase supply (204010041320)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	27	6	594	3564	3.564	Replace 22W CFL bulb by LED bulb (27 no). Replace 40W tube light by energy efficient tub light (24 no). Replace 80W old fan by energy efficient fan (22 no).
2	Tube light	40	24	6	960	5760	5.76	
3	Fan	80	22	6	1760	10560	10.56	
4	Computer	300	0	6	0	0	0	
5	AC	1000	0	6	0	0	0	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	0	24	0	0	0	
8	water filter	450	0	6	0	0	0	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	0	4	0	0	0	
				Total	**3314**	**19884**	**19.884**	

Meter no: -6 Three phase supply (204011037261)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	6	6	132	792	0.792	Replace 22W CFL bulb by LED bulb (22 no). Replace 40W tube light by energy efficient tub light (29 no). Replace 80W old fan by energy efficient fan (22 no).
2	Tube light	40	29	6	1160	6960	6.96	
3	Fan	80	22	6	1760	10560	10.56	
4	Computer	300	5	6	1500	9000	9	
5	AC	1000	4	6	4000	24000	24	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	0	24	0	0	0	
8	water filter	450	0	6	0	0	0	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	1	4	746	2984	2.984	
				Total	**9298**	**54296**	**54.296**	

Meter no: -7 Three phase supply (204011037270)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	12	6	264	1584	1.584	Replace 22W CFL bulb by LED bulb (12 no). Replace 40W tube light by energy efficient tub light (06 no). Replace 80W old fan by energy efficient fan (08 no).
2	Tube light	40	6	6	240	1440	1.44	
3	Fan	80	8	6	640	3840	3.84	
4	Computer	300	4	6	1200	7200	7.2	
5	AC	1000	4	6	4000	24000	24	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	0	24	0	0	0	
8	water filter	450	0	6	0	0	0	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	0	4	0	0	0	
				Total	**6344**	**38064**	**38.064**	

Meter no: -8 Single phase supply (204013050389)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	1	6	22	132	0.132	Replace 22W CFL bulb by LED bulb (01 no). Replace 40W tube light by energy efficient tub light (03 no). Replace 80W old fan by energy efficient fan (01 no).
2	Tube light	40	3	6	120	720	0.72	
3	Fan	80	1	6	80	480	0.48	
4	Computer	300	0	6	0	0	0	
5	AC	1000	0	6	0	0	0	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	2	24	210	5040	5.04	
8	water filter	450	0	6	0	0	0	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	0	4	0	0	0	
				Total	**432**	**6372**	**6.372**	

Meter no: -9 Single phase supply (204013051164)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	5	6	110	660	0.66	Replace 22W CFL bulb by LED bulb (05no). Replace 40W tube light by energy efficient tub light (01 no). Replace 80W old fan by energy efficient fan (2no).
2	Tube light	40	1	6	40	240	0.24	
3	Fan	80	2	6	160	960	0.96	
4	Computer	300	0	6	0	0	0	
5	AC	1000	0	6	0	0	0	
6	T.V	80	1	6	80	480	0.48	
7	refrigerator	105	1	24	105	2520	2.52	
8	water filter	450	1	6	450	2700	2.7	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	0	4	0	0	0	
				Total	**945**	**7560**	**7.56**	

Meter no: -10 Single phase supply (204013051172)

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	3	6	66	396	0.396	Replace 22W CFL bulb by LED bulb (03no). Replace 40W tube light by energy efficient tub light (01 no). Replace 80W old fan by energy efficient fan (2no).
2	Tube light	40	1	6	40	240	0.24	
3	Fan	80	2	6	160	960	0.96	
4	Computer	300	0	6	0	0	0	
5	AC	1000	0	6	0	0	0	
6	T.V	80	0	6	0	0	0	
7	refrigerator	105	1	24	105	2520	2.52	
8	water filter	450	1	6	450	2700	2.7	
9	flood light	400	0	10	0	0	0	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	0	4	0	0	0	
				Total	**821**	**6816**	**6.816**	

3. SUMMARY ANALYSIS OF CURRENT SCENARIO:
3.1 ANALYSIS ENERGY METER.

As per MSEDCL tariff LT-I Residential Tariff

Consumption Slab (kWh)	Fixed/ Demand Charge	Wheeling Charge (Rs/kWh)	Energy Charge (Rs. /kWh)
0-100 units	Three Phase - Rs. 373 per month$$	**1.38**	**4.68**
101 - 300 units		**1.38**	**6.73**
301 - 500 units		**1.38**	**9.75**

Consumption Slab (kWh)	Fixed/ Demand Charge	Wheeling Charge (Rs/kWh)	Energy Charge (Rs. /kWh)
0-100 units	Single Phase - Rs. 102 per month$$	**1.38**	**3.44**
101 - 300 units		**1.38**	**7.34**
301 - 500 units		**1.38**	**10.36**

3.2 ELECTRICITY BILLS FOR ACADEMIC YEAR 2021-22

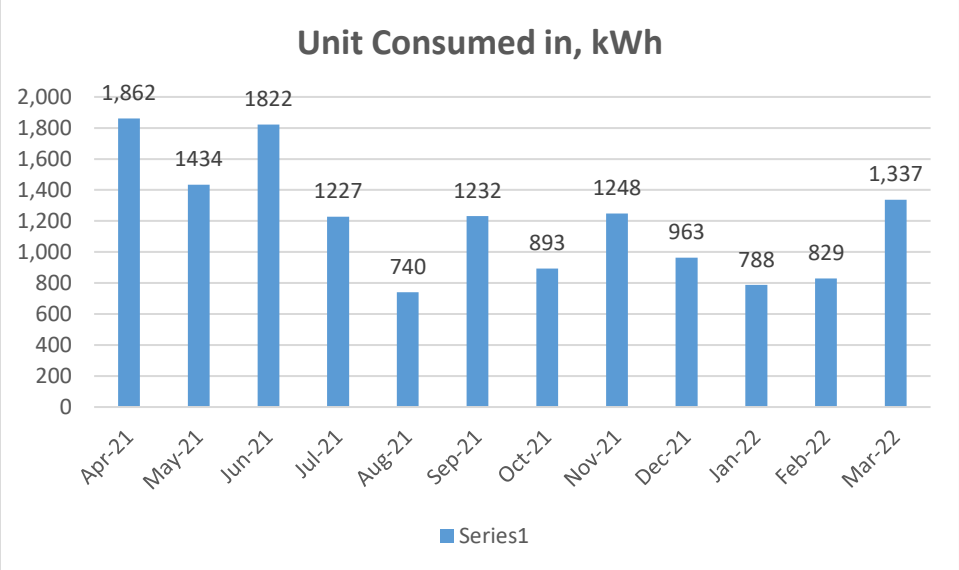
Meter no: -1 Three phase supply (204010013121)

Approx. Unit charges including taxes: - Rs.8/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= Apr-21 (1862 Units) (R.S:14,900)

204010013121			
Sr. No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	1,337	10,500.00
2	Feb-22	829	6,680.00
3	Jan-22	788	6,370.00
4	Dec-21	963	7,680.00
5	Nov-21	1,248	9,770.00
6	Oct-21	893	7,160.00
7	Sep-21	1,232	6,010.00
8	Aug-21	740	-3,650.00
9	Jul-21	1,227	9,660.00
10	Jun-21	1,822	3,360.00
11	May-21	1,434	10,680.00
12	Apr-21	1,862	14,900.00
	Total	**14,375**	**89,120**
	Maximum	**1,862**	**14,900**
	Minimum	**740**	**-3,650**
	Average	**1,198**	**7,427**



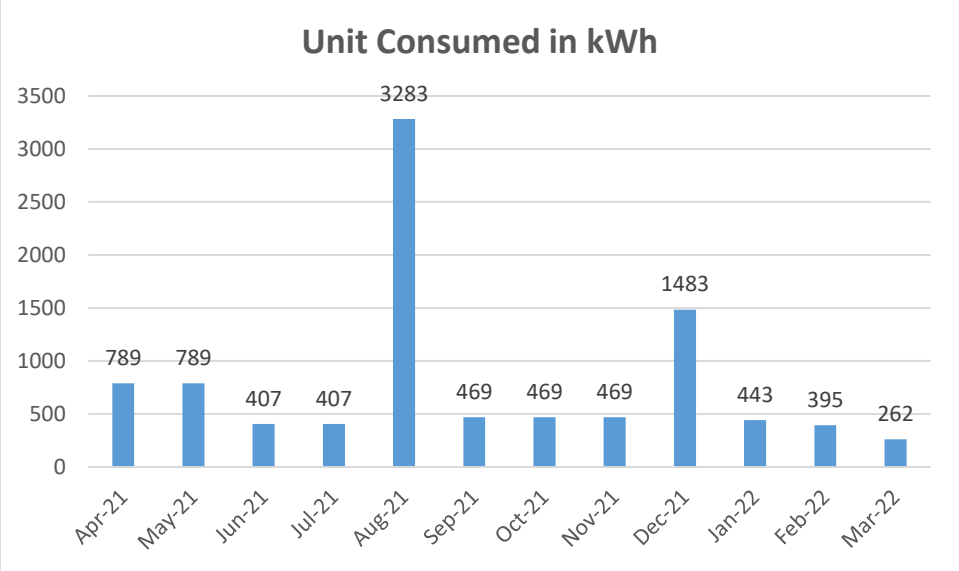
Meter no: -2 Three phase supply (204010014721)

Approx. Unit charges including taxes: - Rs.8.6/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= Aug-21 (3283 Units)

204010014721			
Sr.No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	262	5,890.00
2	Feb-22	395	3,420.00
3	Jan-22	443	3,770.00
4	Dec-21	1,483	1,030.00
5	Nov-21	469	3,940.00
6	Oct-21	469	3,970.00
7	Sep-21	469	1,460.00
8	Aug-21	3,283	-2,520.00
9	Jul-21	407	3,510.00
10	Jun-21	407	3,510.00
11	May-21	789	5,840.00
12	Apr-21	789	12,430.00
	Total	**9,665**	**46,250**
	Maximum	**3,283**	**12,430**
	Minimum	**262**	**-2,520**
	Average	**805**	**3,854**



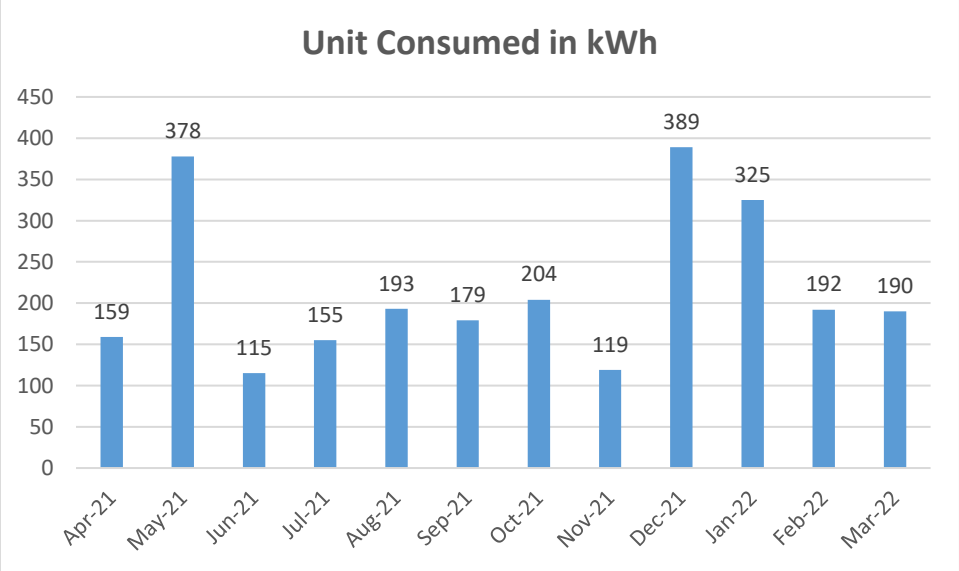
Meter no: -3 Three phase supply (204010720731)

Approx. Unit charges including taxes: - Rs.8.6/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= Dec-21 (389 Units) (R.S.7850)

204010720731			
Sr.No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	190	1,880.00
2	Feb-22	192	1,890.00
3	Jan-22	325	2,890.00
4	Dec-21	389	3,370.00
5	Nov-21	119	1,340.00
6	Oct-21	204	1,980.00
7	Sep-21	179	1,810.00
8	Aug-21	193	1,910.00
9	Jul-21	155	1,620.00
10	Jun-21	115	7,850.00
11	May-21	378	6,480.00
12	Apr-21	159	3,360.00
	Total	**2,598**	**36,380**
	Maximum	**389**	**7,850**
	Minimum	**115**	**1,340**
	Average	**217**	**3,032**



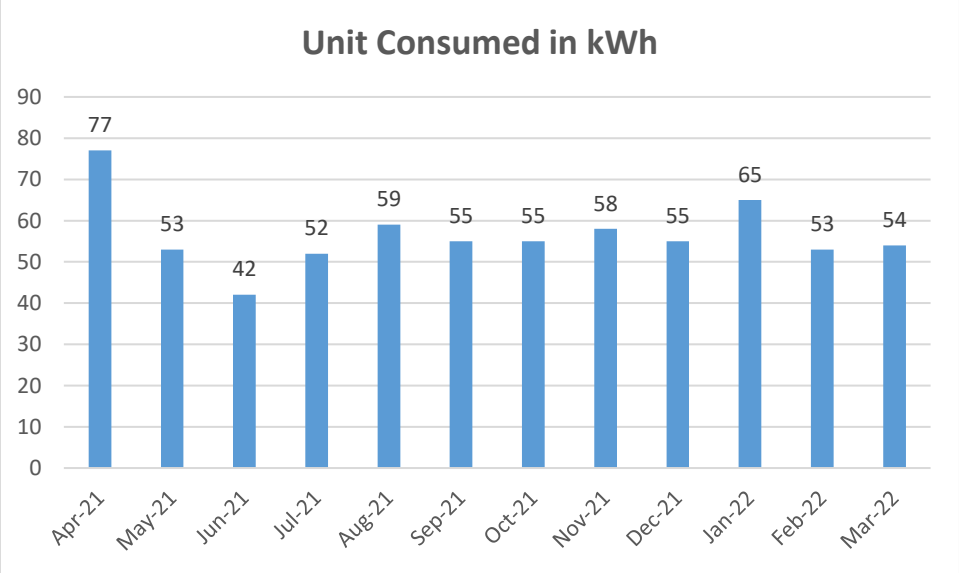
Meter no: -4 Single phase supply (204010742174)

Approx. Unit charges including taxes: - Rs.8.6/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= Apr-21 (77 Units) (R.S. 2760)

204010742174			
Sr.No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	54	850
2	Feb-22	53	850
3	Jan-22	65	930
4	Dec-21	55	860
5	Nov-21	58	880
6	Oct-21	55	870
7	Sep-21	55	860
8	Aug-21	59	60
9	Jul-21	52	840
10	Jun-21	42	770
11	May-21	53	800
12	Apr-21	77	2,760.00
	Total	**678**	**11,330**
	Maximum	**77**	**2,760**
	Minimum	**42**	**60**
	Average	**57**	**944**



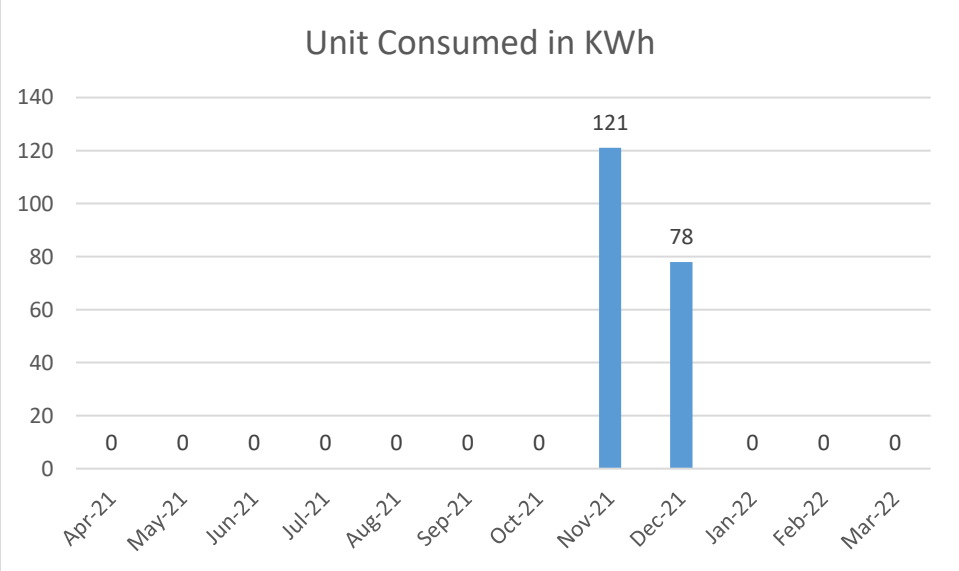
Meter no: -5 Single phase supply (204010041320)

Approx. Unit charges including taxes: - Rs.11/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= nov-21 (121 Units) (R.S. 1360)

204010041320			
Sr.No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	0	370
2	Feb-22	0	370
3	Jan-22	0	380
4	Dec-21	78	130
5	Nov-21	121	1,360.00
6	Oct-21	0	370
7	Sep-21	0	370
8	Aug-21	0	380
9	Jul-21	0	380
10	Jun-21	0	920
11	May-21	0	550
12	Apr-21	0	360
	Total	**199**	**5,940**
	Maximum	**121**	**1,360**
	Minimum	**0**	**130**
	Average	**17**	**495**



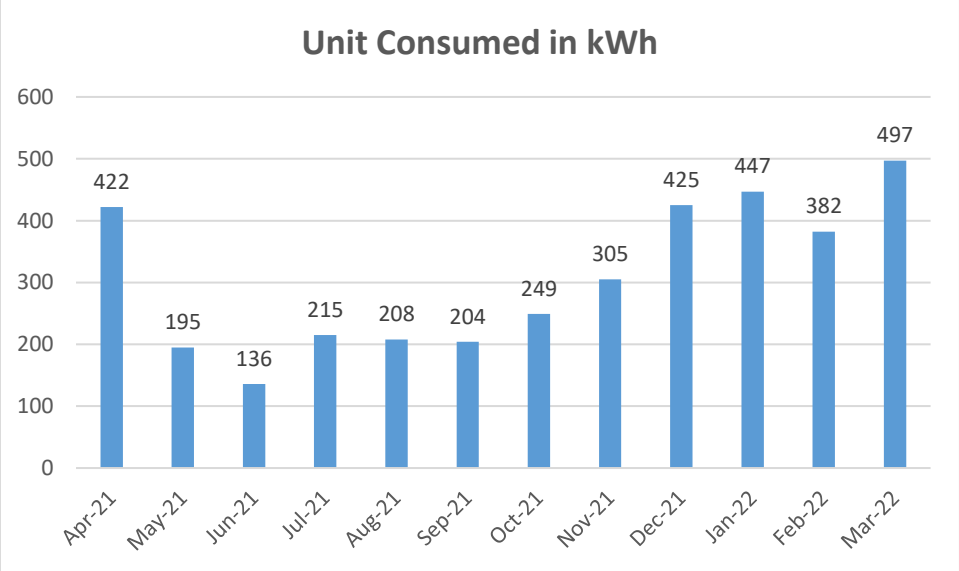
Meter no: -6 Three phase supply (204011037261)

Approx. Unit charges including taxes: - Rs.11.69/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= Mar-22 (497 Units) (R.s. 7730)

204011037261			
Sr. No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	497	5,810.00
2	Feb-22	382	4,050.00
3	Jan-22	447	4,980.00
4	Dec-21	425	4,640.00
5	Nov-21	305	3,010.00
6	Oct-21	249	2,460.00
7	Sep-21	204	2,010.00
8	Aug-21	208	2,030.00
9	Jul-21	215	2,130.00
10	Jun-21	136	7,730.00
11	May-21	195	6,390.00
12	Apr-21	422	4,630.00
	Total	**3,685**	**49,870**
	Maximum	**497**	**7,730**
	Minimum	**136**	**2,010**
	Average	**307**	**4,156**



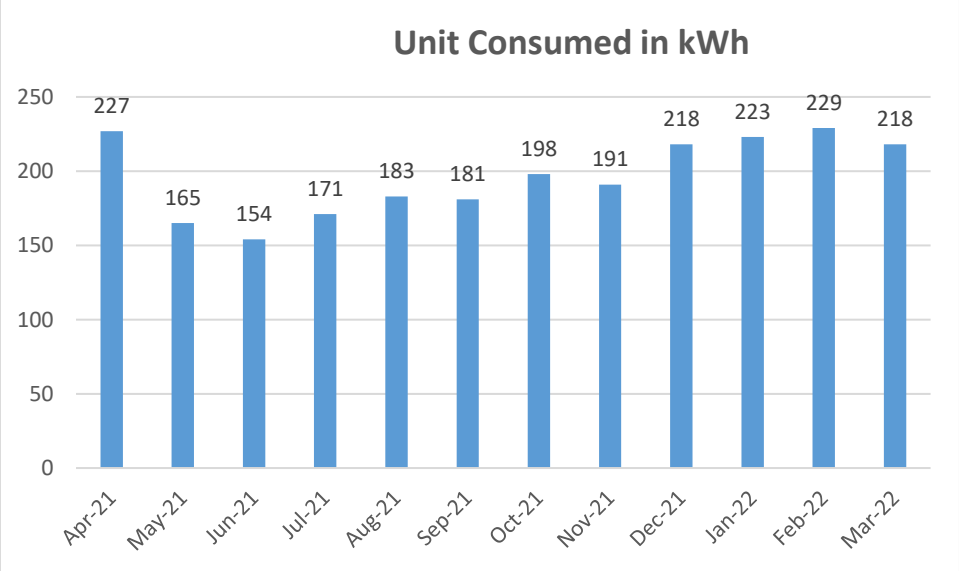
Meter no: -7 Three phase supply (204011037270)

Approx. Unit charges including taxes: - Rs.8.76/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= Feb-22 (229 Units) (R.S.4290)

204011037270			
Sr. No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	218	1,910.00
2	Feb-22	229	1,970.00
3	Jan-22	223	1,920.00
4	Dec-21	218	1,850.00
5	Nov-21	191	1,590.00
6	Oct-21	198	1,670.00
7	Sep-21	181	1,490.00
8	Aug-21	183	1,500.00
9	Jul-21	171	1,400.00
10	Jun-21	154	4,290.00
11	May-21	165	3,050.00
12	Apr-21	227	1,970.00
	Total	**2,358**	**24,610**
	Maximum	**229**	**4,290**
	Minimum	**154**	**1,400**
	Average	**197**	**2,051**



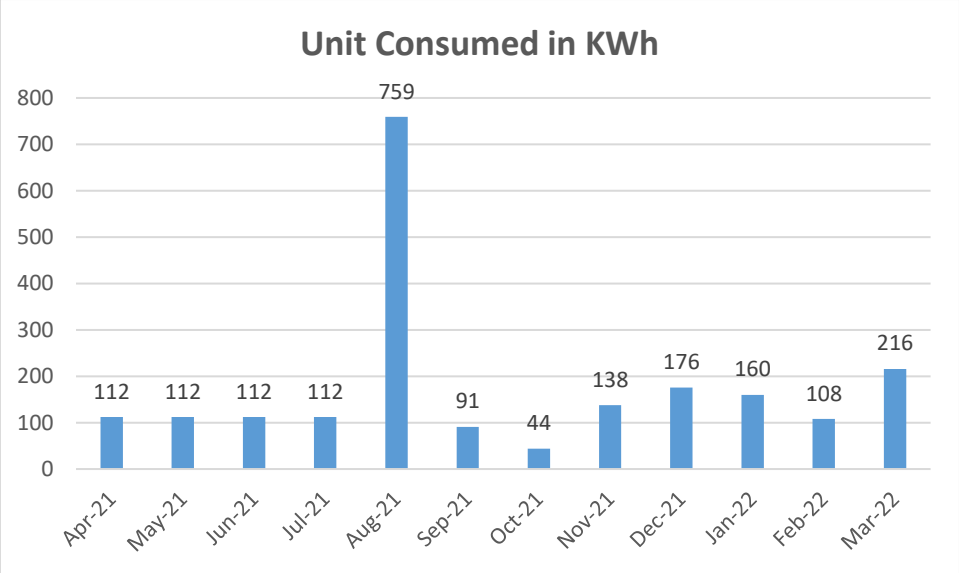
Meter no: -8 Single phase supply (204013050389)

Approx. Unit charges including taxes: - Rs.12/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= Aug-21 (759 Units) (R.S.6250)

204013050389			
Sr. No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	216	2,790.00
2	Feb-22	108	6,250.00
3	Jan-22	160	4,580.00
4	Dec-21	176	2,360.00
5	Nov-21	138	1,960.00
6	Oct-21	44	970
7	Sep-21	91	1,460.00
8	Aug-21	759	3,790.00
9	Jul-21	112	600
10	Jun-21	112	-1,070.00
11	May-21	112	-2,740.00
12	Apr-21	112	-4,320.00
	Total	**2,140**	**16,630**
	Maximum	**759**	**6,250**
	Minimum	**44**	**-4,320**
	Average	**178**	**1,386**



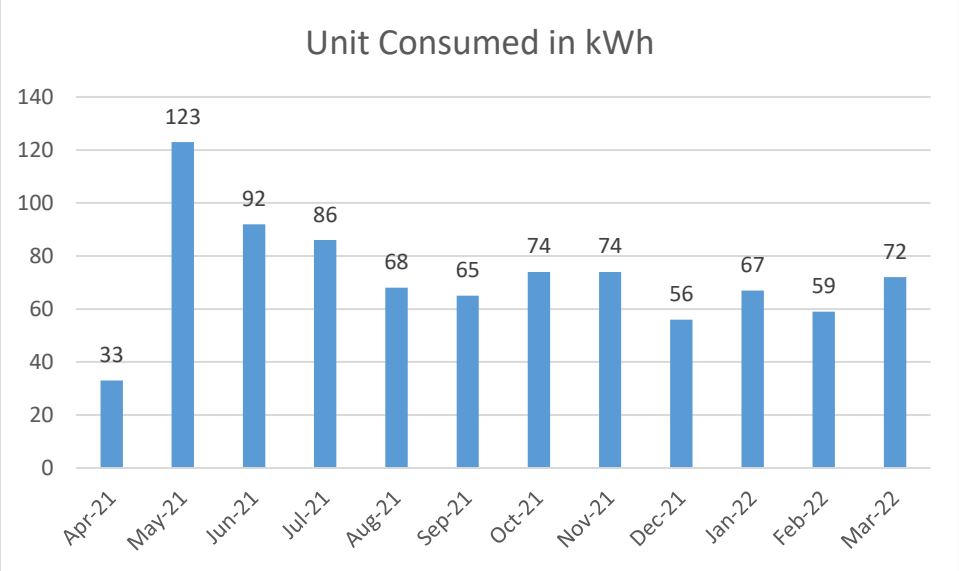
Meter no: -9 Single phase supply (204013051164)

Approx. Unit charges including taxes: - Rs.7.18/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

Maximum Consumption in year 2021-22= May-21 (123 Units) (R.S. 4060)

20401351164			
Sr.No	**Month**	**Unit Consumed in kWh**	**Bill Amount, Rs.**
1	Mar-22	72	2,400.00
2	Feb-22	59	1,120.00
3	Jan-22	67	1,200.00
4	Dec-21	56	1,100.00
5	Nov-21	74	1,280.00
6	Oct-21	74	1,280.00
7	Sep-21	65	1,200.00
8	Aug-21	68	1,220.00
9	Jul-21	86	1,410.00
10	Jun-21	92	4,060.00
11	May-21	123	2,570.00
12	Apr-21	33	850
	Total	**869**	**19,690**
	Maximum	**123**	**4,060**
	Minimum	**33**	**850**
	Average	**72**	**1,641**



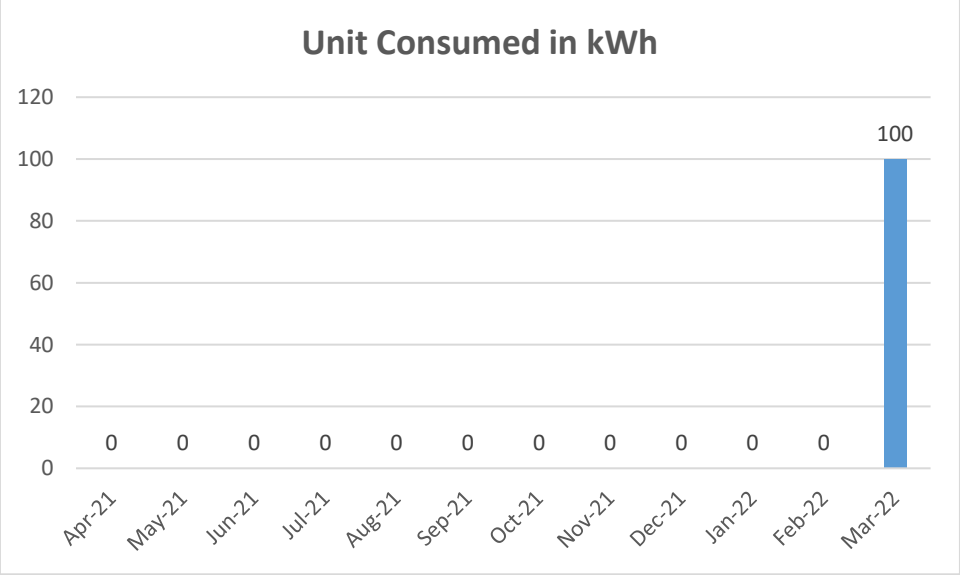
Meter no: -10 Single phase supply (204013051172)

Approx. Unit charges including taxes: - Rs.7.18/- Unit

Back up for computer systems: - Online UPS system installed for all computer systems and Lab.

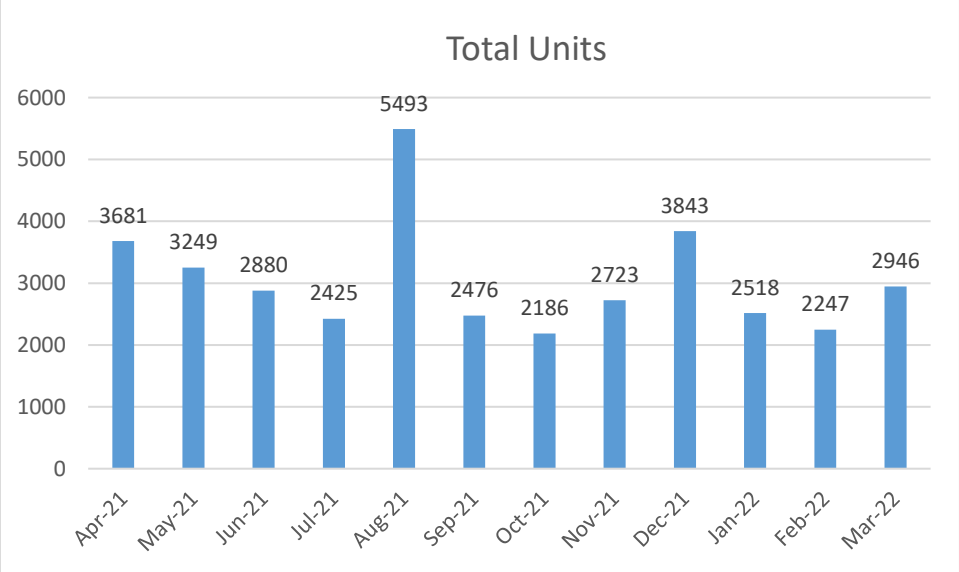
Maximum Consumption in year 2021-22= Mar-21 (100 Units) (R.S. 1970)

Sr. No	Month	Unit Consumed in kWh	Bill Amount, Rs.
1	Mar-22	100	1,970.00
2	Feb-22	0	410
3	Jan-22	0	410
4	Dec-21	0	410
5	Nov-21	0	410
6	Oct-21	0	420
7	Sep-21	0	420
8	Aug-21	0	420
9	Jul-21	0	420
10	Jun-21	0	1,160.00
11	May-21	0	740
12	Apr-21	0	410
	Total	**100**	**7,600**
	Maximum	**100**	**1,970**
	Minimum	**0**	**410**
	Average	**8**	**633**



Total Consumption

Sr. No	Month	Total Units	Total Bill
1	Mar-22	2946	34370
2	Feb-22	2247	27010
3	Jan-22	2518	27430
4	Dec-21	3843	23430
5	Nov-21	2723	25540
6	Oct-21	2186	21150
7	Sep-21	2476	17090
8	Aug-21	5493	5140
9	Jul-21	2425	21970
10	Jun-21	2880	32580
11	May-21	3249	34360
12	Apr-21	3681	37350
	Total	**36667**	**307420**



3.3 INSTITUTE IN PROCESS TOWARDS ENERGY CONSERVATION:

- Step by step replacing the 40 Watt i.e. T12 Fluorescent Tube Lights in the class rooms and Laboratory rooms and using 12 W LED which gives almost same luminous flux.
- Replacing the 80W ceiling fan in class rooms and laboratories by energy efficient fans of 35 w is much help to save the energy.

4.0 SCOPE OF WORK:

1. Detailed examination of the existing energy uses of the facility.
2. Measurement and analysis of demand and power factor, energy meter to reduce the energy bill.
3. Detailed examination of lighting system and other electrical equipment in laboratory and class rooms.
4. Survey report of lighting system in overall institute.

5. Methodology of the Audit

5.1 SAVING POTENTIAL CALCULATION:

Assumptions: - Working hours of class room, laboratory and office = Approx.6hrs Unit for institute energy bill = Approx. Rs.8.6 / kwh

Specimen calculation for meter no:1

Sr.no	Particulars	Wattage	Quantity	Run Time (Hr/Day)	Total wattage	Watt Hours/Day	Energy consumed per day kWh/day	Recommendation
1	CFL Bulb	22	25	6	550	3300	3.3	Replace 22W CFL bulb by LED bulb (25no). Replace 40W tube light by energy efficient tub light (20 no). Replace 80W old fan by energy efficient fan (22 no).
2	Tube light	40	20	6	800	4800	4.8	
3	Fan	80	22	6	1760	10560	10.56	
4	Computer	300	31	6	9300	55800	55.8	
5	AC	1000	5	6	5000	30000	30	
6	T.V	80	1	6	80	480	0.48	
7	refrigerator	105	1	24	105	2520	2.52	
8	water filter	450	1	6	450	2700	2.7	
9	flood light	400	1	10	400	4000	4	
10	Gas Geyser	1500	0	2	0	0	0	
11	Electric Motor	746	1	4	746	2984	2.984	
				Total	**19191**	**117144**	**117.144**	

Specimen calculation for tube set: - Energy consumption of conventional tube light set: - 40Watt capacity tube set used for 6 hrs per day so unit consumed by tube is $\frac{20*40\text{Watt x } 6\text{hr}}{1000} = 4.8$ kwh per day and monthly unit consumed by tube set = 4.8x30 days = 144 kwh / month. Energy consumption of one tube in terms of rupees = 144 kwh x Rs.8.6 = Rs.1238.4.

Specimen calculation for Fan: - A old fan capacity is 80W and used for 6 hrs. day so unit consumed by fan is $\frac{22*80\text{Watt x } 6\text{hr}}{1000} = 10.56$ kwh per day and monthly unit consumed by fan = 10.56x30 days = 316.8 kwh / month. Energy consumption of fan in terms of Rs. = 316.8 kwh x Rs.8.3 = Rs.2724.48.

6.0 CONCLUSIONS AND GENERAL RECOMMENDATION OF THE AUDIT

a) Replace conventional tube light fittings of 40W with T-5 LED Tube light for 400 – 500 lumens light efficacy. Replace 80 W old fan by energy efficient fans.

b) Replace old version computer system with energy efficient LCD monitor and new generation energy efficient computer systems.

c) Ensure maximum natural daylight and natural ventilation in class rooms, Labs and staff rooms i.e. when it's bright outside in the daytime, turn off the light and open blinds of windows.

d) In fact, try to turn on lights in our cabin, labs only after the sun sets. Do your reading and writing near a window or natural illumination.

e) Installing occupancy sensors to turn ON-OFF lighting and fan can save considerable energy.

f) Overhead projectors, computers and UPS all use electricity for power. Be sure to unplug these types of items when they're not in use can achieve energy saving considerably.

g) Use power "saving option" (hibernate mode) for computer and possibly switched off when not in use.

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Energy Auditor (BEE) EA3023