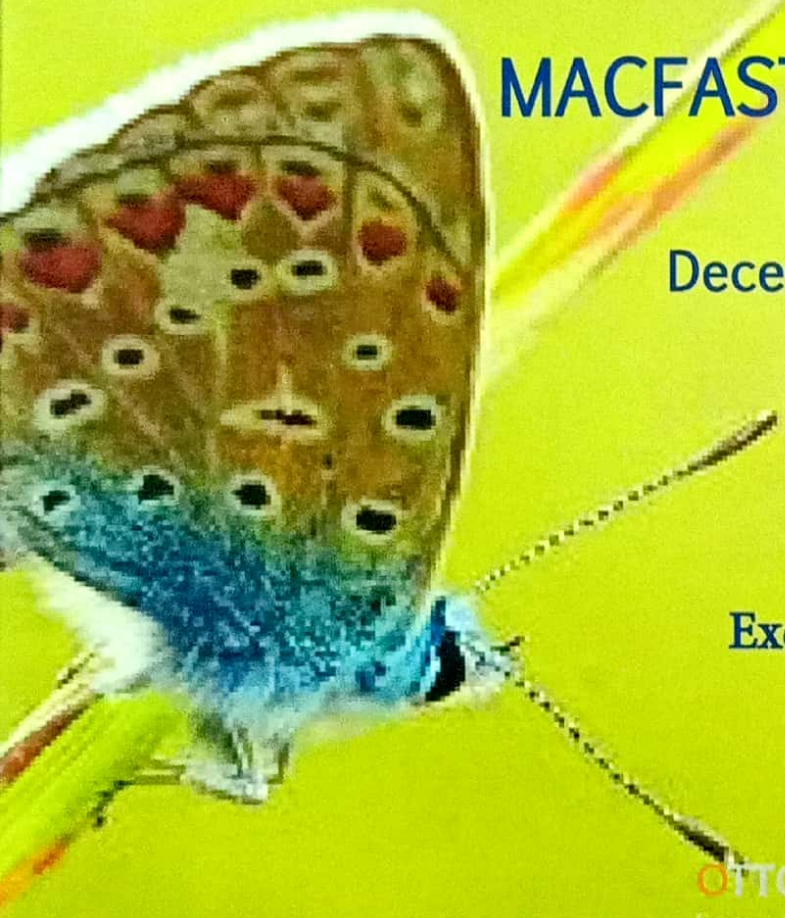



ENVIRONMENTAL AUDIT REPORT

MACFAST, THIRUVALLA

December 2020



Executed By

OTTOTRACTIONS

Energy · Engineering · Environment

ENVIRONMENT AUDIT REPORT

MAR ATHANASIOS COLLEGE FOR ADVANCED STUDIES (MACFAST)

THIRUVALLA

December 2020

OTTOTRACTIONS

Environment Audit Report
MACFAST, THIRUVALLA
Report no: EA 737
2021-MARCH

About OTTOTRACTIONS

OTTOTRACTIONS established in 2005, is an organization with proven track record and knowledge in the field of energy, engineering, and environmental services. They are the first Accredited Energy Auditor from Kerala for conducting Mandatory Energy Audits in Designated Consumers as per Energy Conservation Act-2001. Government of Kerala recognized and appreciated **OTTOTRACTIONS** by presenting its prestigious **"The Kerala State Energy Conservation Award 2009"** for the best performance as an Energy Auditor.

Green Audit Team

Ottotractions		
1	Er. Suresh Babu B V,	Accredited Energy Auditor, AEA 33
2	Er. B. Zachariah	Director, Ottotractions
3	Er. Abin Baby,	Project Engineer, Ottotractions
MACFAST		
4	Fr. Dr. Cheran J. Kottayil	Principal
5	Prof. Varghese Abraham	Administrator
6	Dr. Jeny Jacob	HoD, School of Biosciences
7	Mr. Ajay Kurien,	Asst. Coordinator IQAC

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Acknowledgment

We were privileged to work together with the administration and staff of MACFAST, Thiruvalla for their timely help extended to complete the audit and bringing out this report. With gratitude, we acknowledge the diligent effort and commitments of all those who have helped to bring out this report.

We also take this opportunity to thank the bona-fide efforts of team OTTOTRACTIONS for unstinted support in carrying out this audit.

We thank our consultants, engineers and backup staff for their dedication to bring this report.

Thank you.

B V Suresh Babu
Accredited Energy Auditor

Contents

INTRODUCTION

Ottotractions was asked by the MACFAST, Thiruvalla to carry out an environmental audit of their campus building.

Each section contains recommendations for improvements relating to environmental issues, which are consolidated in the action plan in section 4.

BACKGROUND

Mar Athanasios College for Advanced Studies Thiruvalla (MACFAST) is a premier post graduate research institute, established in 2001 with the objective of offering the best courses in Business Management, Information Technology and Biosciences to mould eminent professionals over the years to confront the challenging demands of the corporate world and the world of science & technology. MACFAST is affiliated to the Mahatma Gandhi University, Kottayam, and approved by the All-India Council for Technical Education (AICTE), New Delhi. MACFAST is owned and managed by the Corporate Educational Agency of the Catholic Archdiocese of Thiruvalla, with His Grace Dr. Thomas Mar Koorilos as the President and Patron. Within a very short span of its existence, MACFAST has emerged as a trendsetter in education and has turned in to a benchmark for others to emulate with its unparalleled

hallmark of academic brilliance and social commitment. The college is located in Tiruvalla, an active commercial township in the central Travancore region of Kerala. The two adjacent campuses together bring an idyllic character in shape and the atmosphere around pitches an ambience of solitude, of course, inevitable for intellectual pursuance. Amidst the lush green, stands this multi-storeyed building with a built-up area of 3,00,000 sq. ft

Students	651
Staff	100
Total Occupancy of the college	751

Total student strength of the campus is 651. For calculating per capita carbon emission estimation, only the student strength is taken into account.

ENVIRONMENTAL ISSUES

This section is broken down into the following different areas: waste, water, energy, resource and materials use and procurement. A final 'other' section is also included for any additional issues.

1.1. Waste

The way communities generate and manage their waste plays an absolutely key role in their ability to use resources efficiently. All buildings contain bins for both general waste and mixed recyclables

(plastic bottles, card, cans and paper). On average each floor in the buildings areas has its own general waste bin and one recycling bin. When the bins are emptied by the cleaning staff. Bins are marked and kept in different colors for identification, however in some locations throughout the building it was unclear which bins were for which waste streams.

There are four basic ways in which campus can do plastic recycling collection services for plastic bottles and containers – curbside, drop-off, buy-back or deposit/refund programs. The first, and most widely accessible, collection method is curbside collection of recyclables. The campus is installed bins to collect plastic bottles and single use plastics. Government Law college, Ernakulam has given a proper awareness on plastic waste problems and they are discouraging the students or teachers to carry plastics to the campus. The Nature club is very active in the campus and do a verity of programs to build awareness on waste management. The reports on different activities of the club are attached as technical supplement of this report.

Waste generated in kg per day	11.265
Waste generated in kg per yr	247

The major concern of waste management will be focused on the solid waste produced by the campus. Solid wastes produced in the campus are mainly of three types, food waste, paper waste, and plastic waste. Food wastes produced in the campus are mainly by two means. The vegetable wastes produced in the kitchen during the food preparation. The food waste produced by the students and staffs of the campus after the consumption of meals. The degradable waste is treated in the biogas plant, the biogas generated is used in the kitchen. A state of art sewerage treatment plant is installed in the campus

Non degradable Waste generated per day	3
Waste generated in kg per Yr	74

Burning plastics shall be strictly restricted inside the campus. Burning plastic and other wastes releases dangerous substances such as heavy metals, Persistent Organic Pollutants, and other toxics into the air and ash waste residues. ... Such pollutants contribute to the development of asthma, cancer, endocrine disruption, and the global burden of disease.

WASTE MINIMIZATION AND RECYCLING

1	Does your institute generate any waste? If so, what are they?	Yes, Solid waste Canteen waste, paper, plastic, Horticulture Waste etc
2	What is the approximate amount of waste generated per day? (in Kilograms/month) (approx.)	Bio Degradable Non- Hazardous Biodegradable Others
3	How is the waste generated in the institute managed? By	Reuse of one side printed Paper for internal communication. Sewage water is discharged to public Sewer. Kitchen waste is used to generate manures and biogas. Two types of Waste bins are provided at campus for biodegradable and non-biodegradable waste.
	1 Composting	In-house
	2 Recycling	In-house
	3 Reusing	In-house
	4 Others (specify)	
4	Do you use recycled paper in institute?	Yes
5	Do you use reused paper in institute?	Yes
6	How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, please specify.	Number of awareness programs through ECO Club
7	Can you achieve zero garbage in your institute? If yes, how?	Not yet achieved. Possible through waste management plan.

Green Cover Audit			
1	Is there a garden in your institute?	Yes	
2	Do students spend time in the garden?	Yes	
3	Total number of Plants in Campus	Plant type Trees Ornamental	Approx. number 29 Not estimated
4	Number of Tree Plantation Drives organized by School per annum. (If Any)	Yes, Through ECO club	
5	Number of Trees Planted in Last FY.		25
	Survival Rate		80%

All the activities including energy consumption and waste management have their equivalent carbon emission and they positively contribute to the carbon footprint of the campus. Carbon sequestration is the reverse process, at which the emitted carbon dioxide will get sequestrated according to the type of carbon sequestration employed. Even though there are many natural sequestration processes are involved in a campus, the major type of sequestration among them is the carbon sequestration by trees.

Trees sequestrate carbon dioxide through the biochemical process of photosynthesis and it is stored as carbon in their trunk, branches, leaves and roots. The amount of carbon sequestrated by a tree can be calculated by different methods. In this study, the volumetric approach was taken into account, thus the details including CBH (Circumference at Breast Height), height, average age, and total number of the trees, are required. Details of the trees in the campus compound are given in the Table 3.18. Detailed table is included in the technical supplement.

Carbon Sequestration	
Particulars	tCO_2e
Carbon sequestration SGC	1.87

Carbon sequestrated by a tree can be found out by using different methods. Since this study is employed the volumetric approach, the calculation consists of five processes.

- Determining the total weight of the tree
- Determining the dry weight of the tree
- Determining the weight of carbon in the tree
- Determining the weight of CO_2 sequestrated in the tree
- Determining the weight of CO_2 sequestrated in the tree per year

Carbon sequestrated by each species of trees in the campus compound is given in the Table.3.19 Detailed calculation results are listed out in the tables provided in the technical supplements of 'Carbon sequestration'.

Sl. No	Name of tree (common name/ scientific name)	Habitat
1	*Swietenia mahagoni*	T
2	*Mimusops elengi*	T
3	*Teak*	T
4	*Acacia mangium*	T
5	*Hevea brasiliensis*	T
6	*Artocarpus heterophyllus*	T
7	*Boswellia sacra*	T
8	*Tamarindus indica*	T
9	*Cocos nucifera*	T
10	*Terminalia catappa*	T
11	*Elarocarpus serratus*	T
12	*Magnolia champaca*	T
13	*Mangifera indica*	T
14	*Pinus*	T
15	*Queen Palm*	T
16	*Nephelium lappaceum*	T
17	*Ficus carica*	T

3.1.1 ENERGY

a. Electricity

The total emission of the carbon dioxide per student is 0.37 kg per year. Emission reduction plans were prepared to bring the existing per capita carbon footprint to zero or below so as to bring the campus a carbon neutral or carbon negative campus. A renewable energy project shall be implemented, ie. 15kWp solar power plant which mitigates 13.99 tCO_2e in the current year. So, the effective specific carbon emission per student is -29.74 kg of CO_2 per year only

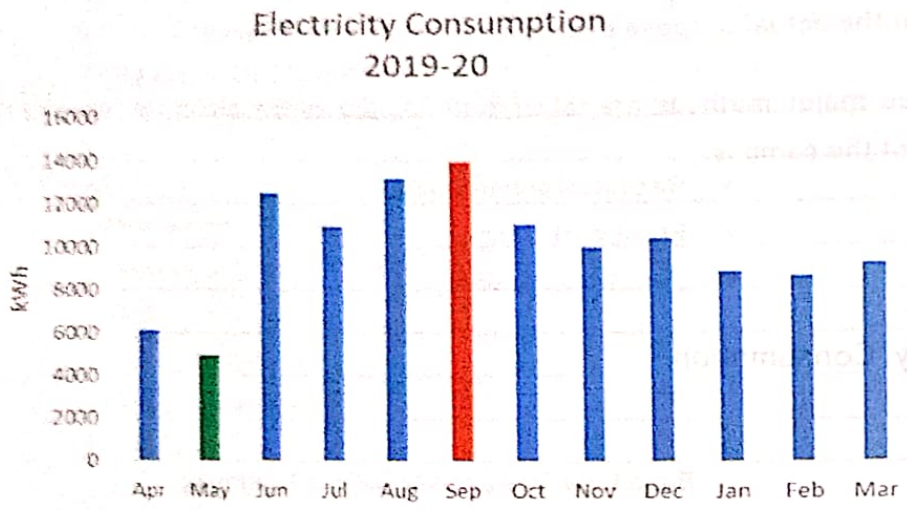
This can be achieved in many ways but, every alternate plan must be in such a way that, it must fulfill the actual purpose of each activity that is considered.

Here, three major methods are taken in to account as the plans for reducing the carbon emission of the campus.

- Resource optimization
- Energy efficiency
- Renewable energy

Electricity Consumption

	Base Line Energy Data (2019-20)(Annual) MACFAST THIRUVALLA	
1	Annual Electricity Consumption (kWh) KSEB	119420
2	Annual Electricity Consumption (kWh)Solar	166075
3	Annual Diesel Consumption (L)	1512
4	Annual Electricity Cost (Lakhs Rs)	1552460
5	Annual Diesel Cost (Lakhs Rs)	120953.00
6	Total Annual Energy Cost (Lakhs Rs)	1233016
7	Rs/Kwh (avg) Electricity	10.33



During the energy audit filed studies, 447 T-12, 28 T8,12-T5 lamps were identified, which is considered as inefficient. 620 CFLs and 553 LED tubes, 1149 LED bulb were found during the audit. The detailed energy efficiency projects are given in the respective chapters of this report.

RESOURCE OPTIMISATION

The effective use of resources can limit its unnecessary wastage. Optimal usage of the resources (such as fuels) can save the fuel and can also reduce the carbon emission due to its consumption. This technique can be effectively implemented in the 'transportation' and 'waste' sectors of the campus.

WASTE MINIMISATION

Optimal utilization of paper and plastic stationaries can reduce the frequency of purchase of items. This can reduce the unnecessary wastage of money as well as the excess production of waste. In the case of food, proper food habits and housekeeping practices can optimize its usage.

Currently, GOVERNMENT LAW COLLEGE, ERNAKULAM is taking an appreciable effort to reduce the unnecessary production of wastes. But the campus still has opportunities to reduce the generation of waste and can improve much more. Resource optimization can be effectively implemented in all type of waste generated in the campus and the campus can expect about 50% reduction the total waste produced.

ENERGY EFFICIENCY

Energy efficiency is the practice of reducing the energy requirements while achieving the required energy output. Energy efficiency can be effectively implemented in all the sectors of the campus.

FUELS FOR COOKING

The campus can install a solar water heater to rise the water temperature to a much higher level, then it has to consume only very less amount of thermal energy for preparing the same amount of food. This can make a positive benefit to the campus by saving money, energy and can reduce the carbon emission of the campus due to thermal energy consumed for cooking.

TRANSPORTATION

Energy efficiency of the transportation sector is mainly depended on the fuel efficiency of the vehicles used. Here mileage of the vehicle (kmpl - Kilometers per Liter) is calculated to assess the fuel efficiency of the vehicle. Percentage of closeness is the ratio of actual mileage of the vehicle to its expected mileage. If the percentage of closeness of mileages of each vehicle is greater than that of its average, then the efficiency status of the vehicle is considered as 'Above average' and else, it is considered as 'Below average'

Renewable Energy

Biogas plants and solar power plants are installed in the campus which helps offsetting the carbon foot print. The details of these projects are given in the concerned chapters.

After analyzing the historical and measured data the following projects are proposed to make the campus carbon neutral. The projects are from energy efficiency and renewable energy.

The further additions in the green cover increase will also give positive impact in the carbon mitigation.

Greenhouse Gas Mitigation through Major Energy Efficiency Projects						
Sl No	Projects	Energy saved (Yearly)		Sustainability	First year ton of	Expected Tons of CO_2
		(kWh)	MWh	Years		
1	Energy Saving in Lighting by replacing existing 447 No's T12 Lamps to 18W LED Tube	19176	19.18	10	14.00	139.99
2	Energy Saving in Lighting by replacing existing 28 No's T8 Lamps to 18W LED Tube	1238	1.24	10	0.90	9.04
3	Energy Saving in Lighting by replacing existing 12 No's T5 Lamps to 18W LED Tube	531	0.53	10	0.39	3.87
4	Energy Saving in Lighting by replacing existing 620 No's CFL Lamps to 9W LED Bulbs	27416	27.42	10	20.01	200.14

5	Energy Saving by replacing existing 770 No's in-efficient ceiling fans with Energy Efficient Five-star fans	22176	22.18	10	16.19	161.88
	Total	70538	71	10	51	515

Greenhouse Gas Mitigation through Renewable Energy Projects						
Sl No	Projects	Energy saved (Yearly)		Sustainability (Years)	First year ton of CO_2 mitigated	Expected Tons of CO_2 mitigated throughout life cycle
		(kWh)	MWh	Years		
1	Installation of 10 kW Solar Power Plant (proposed)	12775	12.78	25	9.33	233.14

Water Conservation Activities

List four uses of water in your institute

Basic use of water in campus:

1. Drinking –
2. Gardening – STP treated water
3. Kitchen and Toilets –
4. Others –

How does your institute store water? Are there any water saving techniques followed in your institute?	Overhead Water Tanks and Sumps installed for storage of water. Water conservation are in place like open wells and their recharge, ground water re-charge through re-charge pits, RWH ferrocement tank, open tanks.
If there is water wastage, specify why and How can the wastage be prevented / stopped?	No
Record water use from the institute water meter for six months (record at the same time of each day). At the end of the period, compile a table to show how many litres of water have been used.	No logbooks are available
Does your institute harvest rain water?	Yes
Is there any water recycling system?	Yes

General Environmental Awareness Questioner	
Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
Does your institute have any rules to protect the environment? List possible rules you could include.	Yes
Dose Environmental Ambient Air Quality Monitoring conducted by the Institute?	Yes
Dose Environmental Water and Wastewater Quality monitoring conducted by the Institute?	Yes
Dose stack monitoring of DG sets conducted by the Institute?	Yes
Is any warning notice, letter issued by state government bodies?	No
Dose any Hazardous waste generated by the Institute? If yes explain its category and disposal method	Yes
Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
Does your institute have any rules to protect the environment? List possible rules you could include.	Yes
Does housekeeping schedule in your campus?	Yes
Are students and faculties aware of environmental cleanliness ways? If Yes Explain	Yes
Dose Important Days Like World Environment Day, Earth Day, and Ozone Day etc. eminent in Campus?	Yes
Dose Institute participated in National and Local Environmental Protection Movement?	Yes
Dose Institute has any Recognition/certification for environment friendliness?	Yes
Dose Institute using renewable energy?	Yes
Dose Institution conducts a green/environmental audit of its campus?	Yes
Has the institution been audited / accredited by any other agency such as NABL, NABET, TQPM, NAAC etc.?	Yes

Best Practices and Initiatives

Renewable Energy	
Solar Power Plant	Yes
Energy Audit and Green Audit Conducted	
Biogas Plant installed	
Biodiversity Conservation	
Green Cover	Yes
Tree Plantation Drives	
ECO clubs	Yes
Ground Water Recharge	
Rain Water Harvesting System.	Yes
Pollution Reduction Public Transportation	
E Waste Management	Yes
Connected to authorized recycler	Yes
Solid Waste Management	
Lifting of garbage from SGT campus on alternate day by Municipal Corporation.	Yes
Adoption of Village	
CSR	Yes
Water Conservation	Yes
Energy Conservation	

RECOMMENDATIONS

1. Implement a utility monitoring program.
   - Allocate staff to carry out meter readings for electricity, waste and water on regular basis
   - Add monitoring data to spreadsheet so results can be viewed graphically
   - Compare with the utility bills meter readings in order to ensure accuracy;
2. Consider adopting and implementing a sustainable procurement policy which takes into account the whole life cycle of a product, and make sure environmental issues are written into tenders when contracting out.
3. Consider trialing recycled paper again – many recycled brands today, such as

Evolve, are just as good as virgin paper.

4. Trial the use of re-manufactured (i.e. refilled) ink and toner cartridges rather than purchasing new ones.

5. Consider producing some designated 'environmental' pages on the intranet to make it easier for staff to find environmental information. If possible, a discussion forum could be set up to allow easy internal communications and staff to make suggestions for environmental improvements.

6. Environmental training could be formalized and carried out for all staff. It does not have to be too long or onerous, providing it covers key points, particularly in relation to waste so all staff are aware of the legal requirements. At the very least, environmental information should be included in the induction pack.

7. It is strongly recommended that environmental information is also given to students and staff during induction. It is particularly important for them to be aware of what waste they can dispose on site and where they can dispose of it, and what waste streams they must take away with them.

8. Consider implementing an environmental management system to incorporate all improvements and monitoring requirements. It does not need to be a complex system certified to any particular standard, merely a way of ensuring that baselines are set and progress is measured. Formation of Environment Policy and communicated to all faculties and other staff.

9. Plan for Zero Waste Campus Project

10. E-waste monthly inventory be maintained at campus as per E waste rules 2016.

11. Water Meter should be installed at institute for monitoring of water consumption per capita.

12. Increase in Environmental promotional activities for spreading awareness at campus.

13. Environment/Green committee formation for regulating eco-friendly initiatives at campus premises and periphery.

CONCLUSION

This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. The audit has identified several observations for making the campus premise more environmentally

friendly. The recommendations are also mentioned with observations for MACFAST, Thiruvalla team to initiate actions.

Carbon Foot Print

Sl. No.	Particulars	Remarks	Tonne of CO_2e
1	Annual Electricity Consumption (kWh) Grid	**119420**	**97.9**
2	Annual LPG Consumption in kg	168	0.3
3	Annual Diesel Consumption (l) DG sets	1512	4.8
4	Annual Diesel Consumption (l) Transportation	7280	23.3
5	Annual Biogas Consumption in m^3	12600	17.6
6	Food Waste in kg/yr.	247	0.2
7	Paper Waste in kg/yr	74	0.0
8	Plastic Waste in kg/yr	50	0.0
9	**Total Carbon Foot Print tCO_2e/yr**		**144.2**

However, there is scope for further improvement, particularly in relation to waste minimization and energy monitoring. By implementing a basic environmental management system, current good practice can be formalized and a framework can be set up for monitoring, implementation of action plans and continual improvement.

The audit team observed that the overall site is maintained well from environmental perspective. There are no major observations but few things are important to initiate urgently are waste management records by monthly inventory of hazardous waste, rainwater harvesting recharge; water balance cycle and periodic inspection of buildings; environment policy and initiation of composting at campus.

References

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle
- Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Water [Prevention & Control Of Pollution] Cess Act-1977 (Amended 2003) and Rules- 1978
- The Air [Prevention & Control Of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

TECHNICAL SUPPLEMENTS

MACFAST, THIRUVALLA

Electricity Bill Analysis 2019-20

Months	kWh				kVA				PF			Rs (Total)	Rs/kWh
	Z1	Z2	Z3	Total	Z1	Z2	Z3	Max	PF	Penalty	Incentive		
Apr	0	2028	4084	6112	24.08	25.39	24.92	25.39	0.89	378.51	0	71972.41	11.78
May	627	1550	2811	4988	35.72	19.6	17.32	35.72	0.93	0	-470.6	64165.01	12.86
Jun	5640	3015	3858	12513	19.04	0	19.36	19.36	0.95	0	-2023.68	117331.05	9.38
Jul	5521	1936	3490	10947	55.48	30.64	26.92	55.48	0.9	0	0	105583.53	9.64
Aug	6566	2655	3963	13184	61	35	36	61	0.93	321.92	0	125184.99	9.50
Sep	6613	2848	4451	13912	20.04	0	25.36	25.36	0.92	1322.76	0	131673.12	9.46
Oct	3384	2937	4681	11002	42.6	0	39.72	42.6	0.92	1050.92	0	111393.68	10.12
Nov	2419	3035	4515	9969	33.84	0	22.28	33.84	0.91	1284.36		105173.45	10.55
Dec	2323	3021	4997	10341	32	28.6	33.84	33.84	0.91	1314.68		106585.56	10.31
Jan	538	3245	4992	8775	32.44	26.92	28.36	32.44	0.88	2552.71	0	98171.65	11.19
Feb	947	3017	4615	8579	59.88	41.76	36.92	59.88	0.88	2492.52	0	96635.18	11.19
Mar	2233	2317	4548	9098	65	39	35	65	0.86	3675.16	0	99146.40	10.90

Sl NO	Location	Light										FAN			
		T12	T8	T5	CFL	ICL	LEDT	LED B	Sign board	LED B 3W	LED F	CF	EF	WF	PF
1	principal room	7			2			2	3			1	1	2	1
2	library	19			2	2	14					26			
3	Computer lab							45		226				19	
4	Security room				1		1								
5	Canteen							10				8			
6	Director's room	5						4				2			
7	MBA faculty room	7	5						1			8			1
8	MCA faculty room	6			3				2			6			
9	Exam hall	10			1							19			
10	Auditorium				15			4			4	2			
11	Start up	23			5			65				29			
12	Molecular lab	70										1	1		1
13	Bio chemical lab	14			4	1						5	6		
14	Central Instrumentation Facility	27										6			1
15	Board room				11										
16	Conference hall	8									3	10			
17	Entrance	5						8	1		3				
18	Account's office	2						2				2			
19	GH 1 & BH	54			454		450	900				455			
20	GH 1 corridor				38										
21	GH mess	16			2		4	12				22			
22	GH 2 store room				2		12	1							
23	GH 2 guest rooms	2			6		6					4			
24	GH 2 1st floor	7						21				10			
25	Chapel	11										4		6	1
26	GH 2 3rd floor	9						9				9	9	9	
27	GH 2 2nd floor	16					21					16			8

28	GH 2 corridor				27										
29	Bio campus corridor	2			13	1	11	1			2				
30	BC LH 2-9		7				26					32		2	
31	HOD rooms	1	11									1	1		
32	pilot plant & tech centre	4			2							3	2		
33	Bio science faculty room	2					1					3			
34	Bio chemistry lab	3			2							3			
35	Chemical,solar,Generator room	4			1							1			
37	office	3					2					3			
38	admin office				2	1	3	2				2			
39	drivers room	1						3				1			
40	Radio macfest	2						11				3			
41	IT dept room	3										1			
42	PTA,Assurance cell	2			2			6							
43	Dtr of radio st & dept of media studies	2			2			6				2			
44	Macfast tech	1					1					2			
45	Server room	1										2			
46	Old language lab	2										2			
47	Dormetory	2										3			
48	Hostel room	1						2				2			
49	Radio & Recording room			1		2									
50	Kitchen canteen	9						5				5			
51	Garden							14							
52	Electrical room	1						1						1	
53	Store,HR & visitors room	2						7			4	5			
54	MBA LH 206,304,405,404. WR	35	5	11	4						3	3			
55	MCA LH + WR	32			8			8				42			
56	floor Corriders	11			11		1				5	1		1	
57	extra rooms	3										3			

Sl NO	Location		IT							AC			
		TV	PC	UPS	Scanner	PRINTER	Projector	Photo copy	OTHER	1	1.5	2	8
1	principal room	2	4			2						1	
2	library	1	14		1			1		1			
3	Computer lab	6	193			2	3				1		3
4	Security room												
5	Canteen												
6	Director's room		1									1	
7	MBA faculty room		3		1	1							
8	MCA faculty room		3			1							
9	Exam hall												
10	Auditorium			2			1						7
11	Start up		1	3(10 KV)						1			
12	Molecular lab									1		4	
13	Bio chemical lab			3(5KV)									
14	Central Instrumentation Facility		2			1					1		
15	Board room						1					2	
16	Conference hall						1						
17	Entrance												
18	Account's office		3			2						1	
19	GH 1 & BH												
20	GH 1 corridor												
21	GH mess	1										3	
22	GH 2 store room												
23	GH 2 guest rooms									1			
24	GH 2 1st floor												
25	Chapel												
26	GH 2 3rd floor												
27	GH 2 2nd floor												
28	GH 2 corridor												
29	Bio campus corridor												
30	BC LH 2-9						5						
31	HOD rooms		1										

32	pilot plant & tech centre												
33	Bio science faculty room		1			1							
34	Bio chemistry lab												
35	Chemical,solar,General or room												
37	office												
38	admin office		1			1							
39	drivers' room												
40	Radio macfest	1								1			
41	IT dept room		1										
42	PTA, Assurance cell												
43	Dir of radio st & dept of media studies												
44	Macfast tech												
45	Server room											1	
46	Old language lab										1		
47	Dormetory												
48	Hostel room												
49	Radio & Recording room		3			1					4		
50	Kitchen canteen												
51	Garden												
52	Electrical room							1					
53	Store,HR & visitors room	1	1										
54	MBA LH 206,304,405,404 WR						2						
55	MCA LH + WR						6						
56	floor Corridors												
57	extra rooms												

Sl NO	Location	cooler	Fridge	Induction Cooker	Heater	oven	Washing machine	Lift	purifier
1	principal room								
2	library	1							
3	Computer lab								
4	Security room								
5	Canteen		3	1		1			
6	Director's room								
7	MBA faculty room								
8	MCA faculty room								
9	Exam hall								
10	Auditorium								
11	Start up								
12	Molecular lab		1			3			
13	Bio chemical lab								
14	Central Instrumentation Facility								
15	Board room								
16	Conference hall								
17	Entrance								
18	Account's office								
19	GH 1 & BH							1	1
20	GH 1 corridor								
21	GH mess								
22	GH 2 store room								1
23	GH 2 guest rooms		1		1		2		
24	GH 2 1st floor								
25	Chapel								
26	GH 2 3rd floor								
27	GH 2 2nd floor								
28	GH 2 corridor								

29	Bio campus corridor								1
30	BC LH 2-9								
31	HOD rooms								
32	pilot plant & tech centre								
33	Bio science faculty room					2			
34	Bio chemistry lab								
35	Chemical solar,Generator room								
37	office								
38	admin office								
39	drivers room								
40	Radio macfest								
41	IT dept room				1				
42	PTA,Assurance cell								
43	Dtr of radio st & dept of media studies				1				
44	Macfast tech								
45	Server room								
46	Old language lab								
47	Dormitory								
48	Hostel room								
49	Radio & Recording room								
50	Kitchen canteen					1			
51	Garden								
52	Electrical room								
53	Store,HR & visitors room								
54	MBA LH 206,304,405,404. WR							1	1
55	MCA LH + WR								3
56	floor Corridors								4
57	extra rooms								

Table 1: Checklist of Birds from MACFAST Collge Campus, Thiruvalla, Kerala (Publication details Nishad, P. M., and P. Greeshma. "Birds in and around MACFAST campus, Thiruvalla, Kerala." *International Journal of Zoology and Research* 7.4 (2017): 19-24.)

Order	Family	Sl. No	Common Name	Scientific Name	IUCN
Anseriformes	Anatidae	1	Lesser Whistling-Duck	*Dendrocygna javanica*	LC
		2	Cotton Pygmy-Goose	*Nettapus coromandelianus*	LC
		3	Indian Spot-billed Duck	*Anas poecilorhyncha*	LC
Phoenicopteriformes	Podicipedidae	4	Little Grebe	*Tachybaptus ruficollis*	LC
Columbiformes	Columbidae	5	Rock Pigeon	*Columba livia*	LC
		6	Spotted Dove	*Streptopelia chinensis*	LC
		7	Yellow-footed Pigeon	*Treron phoenicopterus*	LC
		8	Pompadour Green Pigeon	*Treron pompadora*	LC
Cuculiformes	Cuculidae	9	Greater Coucal	*Centropus sinensis*	LC
		10	Lesser coucal	*Centropus bengalensis*	LC
		11	Pied Cuckoo	*Clamator jacobinus*	LC
		12	Asian Koel	*Eudynamys scolopaceus*	LC
		13	Indian Cuckoo	*Cuculus micropterus*	LC
Gruiformes	Rallidae	14	White-breasted Waterhen	*Amaurornis phoenicurus*	LC
		15	Baillon's Crake	*Zapornia pusilla*	LC
		16	Watercock	*Gallicrex cinerea*	LC
		17	Gray-headed Swamphen	*Porphyrio porphyrio*	LC
		18	Common Moorhen	*Gallinula chloropus*	LC
		19	Common Coot	*Fulica atra*	LC
elicaniformes	Ciconiidae	20	Asian Openbill	*Anastomus oscitans*	LC
		21	Woolly-necked Stork	*Ciconia episcopus*	VU
		22	Painted Stork	*Mycteria leucocephala*	NT
	Ardeidae	23	Black-crowned Night Heron	*Nycticorax nycticorax*	LC
		24	Grey Heron	*Ardea cinerea*	LC
		25	Purple Heron	*Ardea purpurea*	LC
		26	Great Egret	*Ardea alba*	LC
		27	Intermediate	*Ardea intermedia*	LC

			Egret		
		28	Little Egret	*Egretta garzetta*	LC
		29	Western Reef-Heron	*Egretta gularis*	LC
		30	Cattle Egret	*Bubulcus ibis*	LC
		31	Indian Pond-Heron	*Ardeola grayii*	LC
	Threskiornithidae	32	Glossy Ibis	*Plegadis falcinellus*	LC
		33	Black-headed Ibis	*Threskiornis melanocephalus*	NT
	Phalacrocoracidae	34	Little Cormorant	*Microcarbo niger*	LC
		35	Indian Cormorant	*Phalacrocorax fuscicollis*	LC
	Anhingidae	36	Oriental Darter	*Anhinga melanogaster*	NT
Charadriiformes	Recurvirostridae	37	Black-winged Stilt	*Himantopus himantopus*	LC
	Charadriidae	38	Red-wattled Lapwing	*Vanellus indicus*	LC
	Jacanidae	39	Bronze-winged Jacana	*Metopidius indicus*	LC
	Scolopacidae	40	Common Snipe	*Gallinago gallinago*	LC
		41	Marsh Sandpiper	*Tringa stagnatilis*	LC
		42	Wood Sandpiper	*Tringa glareola*	LC
Accipitriformes	Accipitridae	43	Crested Serpent Eagle	*Spilornis cheela*	LC
		44	Eurasian Marsh-Harrier	*Circus aeruginosus*	LC
		45	Shikra	*Accipiter badius*	LC
		46	Brahminy Kite	*Haliastur indus*	LC
		47	Black Kite	*Milvus migrans*	LC
Piciformes	*Picidae*	48	Common Goldenbacked Woodpecker	*Dinopium javanense*	LC
		49	Lesser Golden-backed Woodpecker	*Dinopium benghalense*	LC
	Ramphastidae	50	White-cheeked Barbet	*Psilopogon viridis*	LC

Coraciiformes	Meropidae	51	Blue-tailed Bee-eater	*Merops philippinus*	LC
	Alcedinidae	52	Common Kingfisher	*Alcedo atthis*	LC
		53	Stork-billed Kingfisher	*Pelargopsis capensis*	LC
		54	White-throated Kingfisher	*Halcyon smyrnensis*	LC
		55	Pied Kingfisher	*Ceryle rudis*	LC
Psittaciformes	Psittaculidae	56	Rose-ringed Parakeet	*Psittacula krameri*	LC
		57	Plum-headed Parakeet	*Psittacula cyanocephala*	LC
Passeriformes	Artamidae	58	Ashy Woodswallow	*Artamus fuscus*	LC
	Oriolidae	59	Indian Golden Oriole	*Oriolus kundoo*	LC
		60	Black-hooded Oriole	*Oriolus xanthornus*	LC
	Dicruridae	61	Black Drongo	*Dicrurus macrocercus*	LC
		62	Greater Racket-tailed Drongo	*Dicrurus paradiseus*	LC
	Aegithinidae	63	Common Iora	*Aegithina tiphia*	LC
	Corvidae	64	Rufous Treepie	*Dendrocitta vagabunda*	LC
		65	House Crow	*Corvus splendens*	LC
	Monarchidae	66	Indian Paradiseflycatcher	*Terpsiphone paradisi*	LC
	Dicaeidae	67	Pale-billed Flowerpecker	*Dicaeum erythrorhynchos*	LC
	Nectariniidae	68	Purple-rumped Sunbird	*Leptocoma zeylonica*	LC
		69	Little Spiderhunter	*Arachnothera longirostra*	LC
		70	Loten's Sunbird	*Cinnyris lotenius*	LC
	Estrildidae	71	Scaly-breasted Munia	*Lonchura punctulata*	LC
		72	Black-headed Munia	*Lonchura malacca*	LC
		73	White-rumped Munia	*Lonchura striata*	LC
	Passeridae	74	House Sparrow	*Passer domesticus*	LC

Motacillidae	75	White-browed Wagtail	*Motacilla maderaspatensis*	LC
	76	Grey Wagtail	*Motacilla cinerea*	LC
Cisticolidae	77	Common Tailorbird	*Orthotomus sutorius*	LC
	78	Ashy Prinia	*Prinia socialis*	LC
Acrocephalidae	79	Blyth's Reed-Warbler	*Acrocephalus dumetorum*	LC
Pycnonotidae	80	Red-vented Bulbul	*Pycnonotus cafer*	LC
	81	Red-whiskered Bulbul	*Pycnonotus jocosus*	LC
Leiothrichidae	82	Jungle Babbler	*Turdoides striata*	LC
Hirundinidae	83	Barn Swallow	*Hirundo rustica*	LC
	84	Wire-tailed Swallow	*Hirundo smithii*	LC
Sturnidae	85	Rosy Starling	*Pastor roseus*	LC
	86	Chestnut-tailed Starling	*Sturnia malabarica*	LC
	87	Common Myna	*Acridotheres tristis*	LC
Muscicapidae	88	Oriental MagpieRobin	*Copsychus saularis*	LC

Resource person 2-919 at Green and clean campaign at Kombankerry school organized by Kombankery school and Nehru Yuvakendra

In association with

IQAC MACFAST for the students and public and members of Nehru Yuvakenda

On 2nd September 2019

Forestry club visit to

SCHENDURNEY WILDLIFE SANCTUARY

From 18th July to 20th JULY, 2019

Forestry club members of Macfast College have visited and spent 2 days at Schendurney wildlife sanctuary from 18th July 2019 to 20th July 2019. The group consisted of 14 students and 3 faculties.

CLEAN AND GREEN CAMPAIGN

Organized by

IQAC MACFAST

In Association with

Swachh Bharat Mission

On 25th September 2019

Clean and Green Campaign was organized by the Internal Quality Assurance Cell of MACFAST, in association with Swachh Bharat Mission. The awareness class was presided by the Principal Fr. Dr. Cherian J. Kottayil and led by Dr. Nishad P.M. Associate professor, Department of Computer Applications, MACFAST. The session started at 12 pm. The session was exclusively for first year students from the Dept. of Management studies, Dept. of Computer Applications and School of Bio Sciences. The audience included 252 students and 14 faculties. The session started with a presentation on Green and Clean MACFAST. He said, "the college has initiated the 'clean and green campus programme' with the slogan " Go Green, Save Green to make a Clean and Green Campus" it aimed at developing a model campus which is waste-free, energy-efficient, green and healthy, and empowering the students to directly involve in environmental issues that will imbibe in the students a spirit of environment consciousness and an urge for protection of nature.

He has also explained about the following practices which are being practiced at the campus.

1. Water conservation.
2. Control of water quality.
3. Control of air quality and sound.
4. Solid waste management.
5. Energy conservation and management (Solar power and Biogas plant)
6. Management of landscape and aesthetics.
7. Campus greening.
8. Management of social, ethical and cultural environment.
9. Minimum usage of polythene etc.

He also explained "Green Thiruvalla Mission" which stands for a clean and green city. He also explained the environmental impacts caused by the unsystematic disposal of waste and excessive usage of plastic. The resource person explained brief details about swachh Bharat Mission and highlighted the activities of swachtha mission. The session was interactive and He answered all the questions been asked by the students.

NSS MACFAST

Cleaning at Railway Level cross

On 30th JULY, 2019

The NSS Unit of MACFAST has made a significant effort to clean and collect plastic waste from railway level cross at Thukalasseri with the guidance of the NSS program officer Dr. Jeemon on 30th July 2019. They have collected and eliminated approximately 100 kg of plastic waste from the area.