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CIN No: U74999MP2018PTC045751

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Date: 25/06/2019

GREEN AUDIT CERTIFICATE

This is certified that the Green audit was conducted at Mewar University, Chittorgarh (Rajasthan) dated 11/06/2019 to 14/06/2019 (Four Days) and the audit report has been submitted by Empirical Exergy Private Limited (EEPL), Indore

We avail this opportunity to express our deep and sincere gratitude to the management for their wholehearted support and co-operations during the green audit.

This certificate is being issued based on the Green Audit conducted by EEPL.

For-Empirical Exergy Private Limited

Rajesh Rumar Singst ya (Director)

M.Tech (Energy Maragement),

Certified Energy Auditor [CEA-7271] (BEE, Ministry of Power, Govt. of India)

Lead Auditor ISO50001:2011 [EnMS] from FICCI, Delhi

Certified Water Auditor (NPC, Govt of India)





GREEN AUDIT REPORT

CONSULTATION REPORT



MEWAR UNIVERSITY

Gangrar Chittorgarh (Rajasthan)

PREPARED BY

EMPIRICAL EXERGY PRIVATE LIMITED

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ACKNOWLEDGEMENT

Empirical Exergy Private Limited (EEPL), Indore (M.P) takes this opportunity to appreciate & thank the management of Mewar University Gangrar Chittorgarh for allowing us to conduct the green audit for the university.

We are indeed touched by the helpful attitude and co-operation of all faculties and technical staff, who rendered their valuable assistance and co-operation during the study.

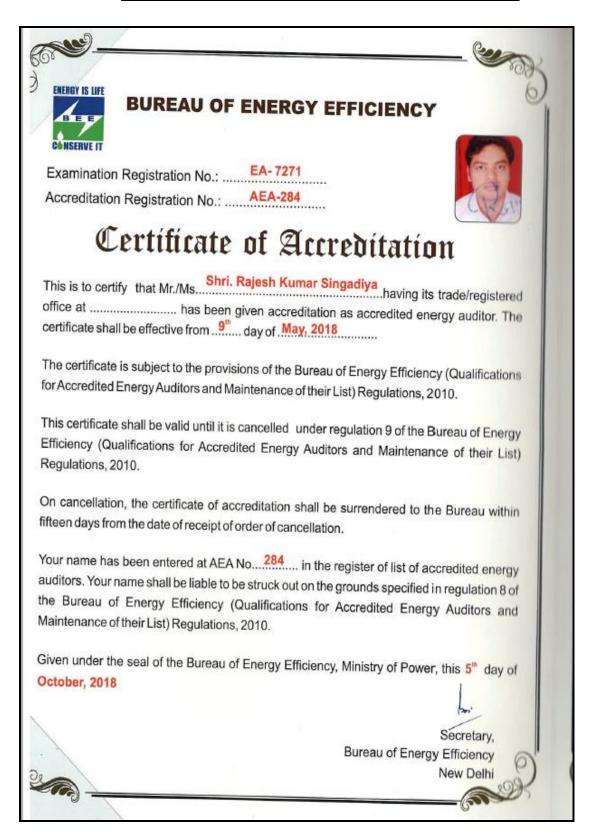
Rajesh Kumar Singadiya

(Director)





CERTIFICATION OF ACCREDITATION







Green Monitoring Committee.

OFFICE OF THE REGISTRAR MEWAR UNIVERSITY, GANGRAR, CHITTORGARH (RAJ.)

Ref. No.MU/RO/2019/2177

25/02/2019

OFFICE ORDER

Reconstitution of Green, Environment & Energy Auditing Committee.

Green Audit, Environment Audit & Energy Audit Committee is reconstituted to conduct the necessary audit in due course. Members of the Audit Committee are mentioned below:

Sr. No.	Name	Designation	Committee
1	Dr. Satish Kumar Sharma	Professor, Department of Agriculture	Co-Ordinator
2	Mr. Rakesh Kumar Singadiya	Director, Empirical Exergy Pvt.Ltd.	External Auditor
3	Mr. K.K. Bhati	Asst. Professor, Department of Agriculture	Internal Auditor
4	Dr. Satish Kumar Ameta	Asst. Professor, Department of Life Science	Internal Auditor
5	Mr. Deepak Kumar Joshi	Asst. Professor, Department of Electrical Engineering	Internal Auditor
6	Dr. Mohammad Ashid	Asst. Professor, Department of Chemistry	Member
7	Mr. Suraj Kumhar	Asst. Professor, Department of Electrical Engineering	Member
8	Mr. Brijesh Kumar Meena	Asst. Professor, Department of Agriculture	Member
9	Mr. H. Widhani	OSD	Member
10	Mr. Narendra Kumar Ved	Non-Teaching Staff	Member
11	Mr. Rajesh Sharma	Non-Teaching Staff	Member

Copy to:

1. PS to Hon'ble Chancellor (for kind information)

2. PS to Hon'ble President/Vice Chancellor(for kind information)

3. All Officers/Deans/Directors/Hod's

4. IT Section/Accounts Dept./All Staff

5. Coordinator - IQAC Cell

6. Record File





The Audit Team

The study team constituted of the following senior technical executives from Empirical Exergy Private Limited,

- **♣ Mr. Rajesh Kumar Singadiya** [Director & Accredited Energy Auditor AEA-0284]
- **Mr. Rakesh Pathak**, [Director & Electrical Expert]
- **↓ Dr. Suresh Kumar Soni** [Certified Energy Auditor & Energy Expert]
- **♣ Mr. Sachin Kumawat** [Sr. Project Engineer]
- **♣ Mr. Aakash Kumawat** [Site Engineer]
- **Mr. Ajay Nahra,** [Sr. Accountant & admin]





EXECUTIVE SUMMARY

Green Initiative Taken by University

LAMPAIGN OF PLANTATION AND GREEN CAMPUS:

University has around **1,494** trees on campus. It's a good initiative taken by management for a green campus under the campaign of a plantation. **It's APPRECIABLE.**

480 KWp SOLAR PHOTOVOLTAIC ROOFTOP INSTALLATION:

University has a 480 KWp solar photovoltaic rooftop grid-connected system installed on various buildings.

GREEN AUDIT RECOMMENDATION: -

4 5 Dust Been System

It is observed that university has adopted three dust been system for all kind of waste generated in university campus. It is recommended to 5 dust been system for segregation of all type of waste.

4 SOLID WASTE MANAGEMENT

❖ The basic principle of good waste management practice is based on the concept of 3Rs, namely, reduce, recycle, and reuse. All the degradable and non-degradable waste materials are collected and processed in an environmentally friendly way on the University campus.

❖ BIODEGRADABLE AND NON-BIODEGRADABLE

Waste materials are collected with help of different colored three dustbin systems on the campus.





CHAPTER-1 INTRODUCTION

1.1 About University

Mewar University is an autonomous body set up by the Government of Rajasthan through Act. No. 4 of 2009 passed by the Rajasthan Legislative Assembly (Government of Rajasthan). The University is recognized by the UGC u/s 2(f) of UGC Act with powers to confer degrees u/s 22(1) of the UGC Act, 1956 vide their letter no. F.9-15/2009(CPP-I) dated 30th March 2009. This is the only private and self-financed University in Rajasthan which is also approved by the UGC u/s 12B of the UGC Act vide their letter no. F.9-15/2009 (CPP-I/PU) dated15th October 2018. The University is also NAAC accredited.

Mewar University has never affiliated with any institution, nor has the University ever set up any study centre in any part of the country other than its main campus at Gangrar in Chittorgarh (Rajasthan).

Mewar University is promoted by the Mewar Education Society (MES). It is controlled by a Board of Management, constituted by the MES, which is headed by Chairperson Shri Ashok Kumar Gadara, a great visionary, educationist, and nationalist, who translated his ideas and dreams of promoting higher education into reality by setting up institutes of learning in various subjects. In no time, he has carved out a niche for himself as an educationist, who believes in the inculcation of values through education in the young generation.

The group, under the able leadership of Dr.Ashok Kumar Gadiya and the active support and association of renowned academicians, experienced professionals, and technocrats, has established a chain of Institutes of higher education and learning:





♣ VISION:-

To develop a center of excellence for technical, professional, and vocational education and research at par with national and international standards.

MISSION:-

To develop the framework for effectively conducting various educational and research programmes of the highest standards to produce confident, self-reliant, and responsible youth for society and outstanding professionals for government, industry, and business. The mission is to "**Reach the unreached**"

Objective:-

- Provide easy access to high-quality education in Management, Engineering, as well as other academic & professional fields to its students, irrespective of their caste, creed, age, gender, region, or country, at an affordable cost.
- * To offer a conducive environment for pursuing research and vocational studies with a market-driven orientation.
- ❖ To expose students to new ideas, fresh vision, and pragmatic ambition, and enhance their competency in the ever-changing business environment.
- To provide a flexible choice-based credit system of education and dual-degree programmes while flexible adopting modes of delivery to suit students' requirements of learning.
- To prepare and assist students in improving their future prospects through career counselling and placement support, on-the-job training, industrial visits, presentations, and group discussions.
- To Promote and practice a convenient distance education concept in India and abroad.
- To spread job-oriented Skill Development education in rural and tribal areas





1.2 About Campus: -

Table 1.1 Details are the total build-up area given in the table:-

TOTAL	TOTAL GROUND COVERED. =20856.78 SQ.MT									
TOTAL	TOTAL OVERALL BUILT-UP ALL FLOORS AREA:- 76024.72 SQ.MT									
			FAR	AREA				BUILT	AREA	
S.NO	BLOCK	GROUND FLOOR AREA IN SQ.MT	FIRST FLOOR AREA IN SQ.MT	SECOND FLOOR AREA IN SQ.MT	THIRD FLOOR AREA IN SQ.MT		GROUND FLOOR AREA IN SQ.MT	FIRST FLOOR SQ.MT	SECOND FLOOR AREA IN SQ.MT	THIRD FLOOR AREA IN SQ.MT
1	ADMINISTRATIVE AND ACADEMIC BLOCK.	8890.84	8519.33	8675.24	8675.24		8966.05	9050.97	9206.74	9206.74
2	EDUCATION BLOCK	1062.08	1170.08	1062.08	1062.1		1193.08	1253.27	1126.29	1126.29
3	ENGINEERINGBLOCK	1979.9	11979.9	1979.9	0		2126.84	2093.74	2093.74	0
4	MEWAR HOSPITAL	1337.03	1337.03	0	0		1590.91	1590.91	0	0
5	BHAMASHAH HOSTEL	1382.11	1382.11	1382.11	1382.1		1601.64	1572.82	1572.82	1572.82
6	SANGA HOSTEL	1189.78	1189.78	1189.78	1189.8		1359.6	1341.62	1341.62	1341.62
7	KUMBHA HOSTEL	602.71	602.71	620.65	620.65		709.19	697.35	697.35	697.35
8	PRATAP HOSTEL	640.52	640.52	665.78	665.78		749.38	739.64	739.64	739.64





			FAR AREA				BUILT	AREA	
S.NO	BLOCK	GROUND FLOOR AREA IN SQ.MT	FIRST FLOOR AREA IN SQ.MT	SECOND FLOOR AREA IN SQ.MT	THIRD FLOOR AREA IN SQ.MT	GROUND FLOOR AREA IN SQ.MT	FIRST FLOOR SQ.MT	SECOND FLOOR AREA IN SQ.MT	THIRD FLOOR AREA IN SQ.MT
9	PANNA DHAI HOSTEL	376.53	376.53	382.3	382.3	447.6	435.97	435.97	435.97
10	MEERA HOSTEL	323.13	323.13	323.13	323.13	386.87	381.68	381.68	381.68
11	GUEST HOUSE	229.94	223.58	223.58	223.58	295.78	258.82	258.82	258.82
12	STAFF QUARTERS(1 BHK)	285.11	285.11	285.11	285.11	367.6	362.67	362.67	362.67
13	STAFF QUARTER	276.99	276.99	276.99	276.99	353.84	349.18	349.18	349.18
14	ANNAPURNA MESS	613.7	0	0	0	708.4	0	0	0
	TOTAL	19190.37	28306.8	17066.65	15086.78	20856.78	20128.64	18566.52	16472.78





Satellite Image of Mewar University from Google map



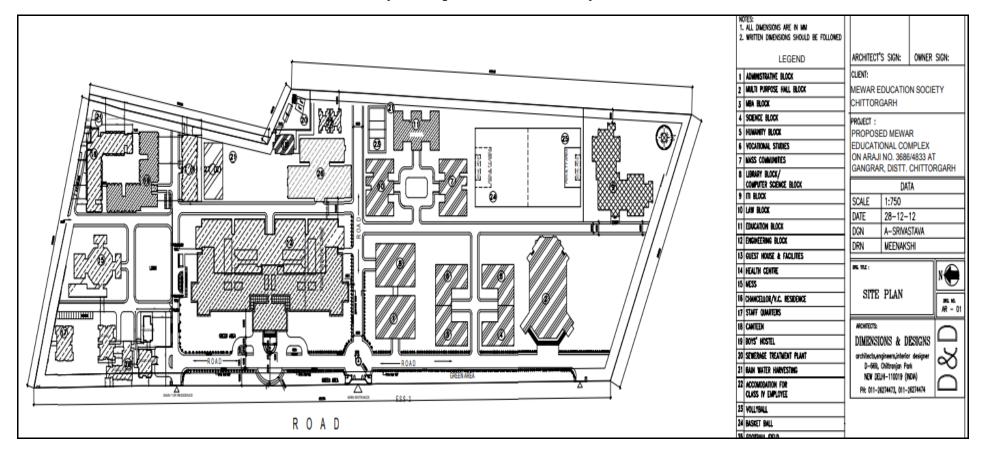
Figure 1.1: - Satellite Image of Mewar University from Google map





1.3 MEWAR UNIVERSITY LAYOUTS OF VARIOUS BUILDINGS

Layout map of Mewar University







1.4 About Green Auditing

Eco campus is a concept implemented in many educational institutions, all over the world to make them sustainable because of their mass resource utilization and waste discharge into the environment.

Green audit means to identify opportunities for sustainable development practices, enhance environmental quality, improve health, hygiene, and safety, reduce liabilities achieve values of virtue. A green audit also provides a basis for calculating the economic benefits of resource conservation projects by establishing the current rates of resource use and their associated costs.

Green auditing of "Mewar University" enables assessment of the lifestyle, action, and its impact on the environment. This green audit was mainly focused on greening indicators like utilization of green energy (solar energy) and optimum use of secondary energy sources (petrol and diesel) in the University campus, vegetation, carbon footprint of the campus, etc. Green auditing aims to help the institution to apply sustainable development practices and to set examples before the community and young learners.

1.5 Objectives of Green Auditing

The general objective of a green audit is to prepare a baseline report on "Green campus" and alternative energy sources (solar energy), measures to mitigate resource wastage, and improve sustainable practices.

The specific objectives are

- ♣ To inculcate values of sustainable development practices through a green audit mechanism.
- Providing a database for corrective actions and plans.
- ♣ To identify the gap areas and suggest recommendations to improve the green campus status of the University.





CHAPTER- 2 GREEN AUDIT

2.1 Green Audit

In the survey, the focus has been given to the assessment of the present status of plants and trees on the university campus and efforts made by the university authorities for nature conservation. The campus is in the vicinity of approximately more than 1,685 trees/medicinal herbs/ornamental plants. The detail is given below:



Figure .2.1 Green campus





2.2 List of plants on the university campus.

Sr. No	Common name	Botanical Name	Quantity
1	Neem	Azadirachta indica	56
2	Kadamba	Neolamarckia kadamba	6
3	Drum Stick	Moringa oleifera	15
4	Peepal	Ficus religiosa	3
5	Desi Babul	Acacia nilotica	26
6	Siris	Albezia lebbeck	28
7	Shisham	Dalbergia sissoo	20
8	Arjun	Terminalia arjuna	18
9	Ashapala	Polyalthia longifolia	45
10	Rudrax	Elaeocarpus ganitrus	4
11	Royal Palms	Roystonea rigia	10
12	Vilayati Babul	Prosopis juliflora	32
13	Monkey Puzzled Tree	Araucaria heterophylla	15
14	Indian Laburnum	Cassia fistula	18
15	Bel	Aegle marmelos	19
16	Geiger Tree	Cordia sebestena	17
17	Siamea Tree	Cassia siamea	32
18	Pagoda Tree	Plumeria rubra	37
19	Kachnar	Bauhinia variegate	68
20	Devil Tree	Alstonia scholaris	56
21	Gulmohar	Delonix regia	40
22	Silver Oak	Grevillea robusta	7
23	Ashapala	Polyalthia longifolia	45
24	Ashoka	Saraca asoca	17
25	Benjamina	Ficus benjamina	36
26	Date Palms	Phoenix dactylifera	18
27	Amla	Emblica officinalis	31
28	Mango	Mangifera indica	18
29	Guava	Psidium gujava	10
30	Mulberry	Morus alba	4
31	Jamun	Syzygium cumini	12
32	Jackfruit	Artocarpus heterophyllus	18
33	Ber	Ziziphus mauritiana	10
34	Pears	Pyrus spp.	14
35	Lemon	Citrus lemon	20
36	White Champa	Plumeria alba	67
37	Rose	Rosa indica	76





Sr. No	Common name	Botanical Name	Quantity
38	Duranta	Golden duranta	26
39	Mehndi	Lawsonia inermis	18
40	Kaner	Nerium oleander	23
41	White Cedar	Thuja occisentalis	18
42	China Rose	Hibiscus rosa-sinensis	37
43	Golden Durant	Duranta erecta	30
44	Harsringar	Nyctanthes arbor-tristis	23
45	Patharchatta	Bryophyllum pinnatum	17
46	Tulsi	Ocimum tenuiflorum	60
47	Sarpaganda	Rauvolfia serpentine	56
48	Lemon	Citrus limon (L.)	34
49	Ashwaganda	Withania somnifera	19
50	Beach Launaea	Launaea sarmentosa	17
51	Aloe Vera	Aloe barbadensis Mill.	25
52	Lemon Grass	Cymbopogon citratus	34
53	Chaff-Flower	Achyranthes aspera	7
54	Ajwain	Trachyspermum ammi 1	
55	Kalmegh	Andrographis paniculata	
56	Satawar	Asparagus racemosus 18	
57	Giloey	Tinospora cordifolia	19
58	Harad	Terminalia chebula	7
		Total	1494

University has **1494 trees** on the campus. This is a good initiative taken by management for a green campus under the campaign of the plantation. **It's APPRECIABLE.**





2.2 Green campus photographs



Anthocephalus Cadamba (Kadamb)



Bauhinia variegata (Kachnar)



Delonix regia (Gulmohar)



Guazuma ulmifolia (Bhadraksh)





CHAPTER-3

RENEWABLE ENERGY AND SUSTAINABLE DEVELOPMENT

3.1 Grid Connected Solar Photovoltaic System (480 KWp)

There are 480 KWp solar photovoltaic rooftop grid-connected systems installed on various buildings. System details are given below:

Sr. No	Description		7	Technical Specific	ation	
1	-	Plant	Informatio	n		
1.1	Plant capacity			480 KWp		
1.2	Locations		 Main University building. Kumbha Hostel building. Pratap Hostel building. Sanga Hostel building. Mess Building Panna Dhai Girls Hostel. Meera Girls Hostel. 		ling. g. g.	
1.3	Latitude & Longit	ude	,	23.3103 N & 77.36	519 E	
2		PV F	Panel Detail			
2.1	Make		M/s. Go	ldi Green Technolo	ogies Pvt. Ltd	
2.2	Panel Type			Poly-crystallin	e	
2.3	Panel Wattage			320 Wp		
2.4	No of PV Panel	S		1478		
2.5	Total Capacity			480 KWp		
3		Inverte	er Informati	on		
3.1	Make			KSTAR		
3.2	Model			1. KSG-50K = 0 2. KSG-20K = 0 3. KSG-15K = 0 4. KSG-20K = 0	06 01	
3.3	Capacity			480 Kw		
Sr. No	Building Name	Total No o		Inverter Modal	No of Penal	
1	University Main Building	2		KSG-20 K KSG-50 K	730	
2	Kumbha Hostel	2		KSG-20 K	110	
		1		KSG-15 K		
3	Pratap Hostel			KSG-20 K	108	
4	Sanga Hostel	2		KSG-30 K	190	
5	Mess	2)	KSG-30 K	190	
6	Panna Dhai Hostel	1		KSG-20 K	60	
7	Meera Girls Hostel	1		KSG-30 K	90	





Photographs of solar plant:-





Figure 3.1:- Solar plant 480 KWp and Inverter System





Total Solar unit generation:-

Table 3.2:- Total solar unit generation Year-2018 to 2019

Sr. No	Year	Unit
1	2018-19	4,15,350
	Total	4,15,350

Observation: -

Total unit generation from the installation of the solar system to till time is 4, 15,350 units.





CHAPTER- 4 WASTE MANAGEMENT

4.1 About waste

Human activities create waste, and it is the way these wastes are handled, stored, collected, and disposed of, which can pose risks to the environment and public health waste management is important for an eco-friendly campus. In universities, different types of waste are generated, and its collection and management are very challenging.

Solid waste can be divided into three categories: biodegradable, non-biodegradable and hazardous waste. A bio-degradable waste includes food waste, canteen waste, wastes from toilets, etc. Non-biodegradable wastes include what is usually thrown away in homes and schools such as plastic, tins and glass bottles, etc. Hazardous waste is waste that is likely to be a threat to health or the environment like cleaning chemicals, acids, and petrol.

Unscientific management of these wastes such as dumping in pits or burning them may cause harmful discharge of contaminants into soil and water supplies, and produce greenhouse gases contributing to global climate change respectively. Special attention should be given to the handling and management of hazardous waste generated at the University. Biodegradable waste can be effectively utilized for energy generation purposes through anaerobic digestion or can be converted to fertilizer by composting technology. Non-biodegradable waste can be utilized through recycling and reuse. Thus the minimization of solid waste is essential to a sustainable University. The auditor diagnoses the prevailing waste disposal policies and suggests the best way to combat the problems.

Table 4.1 Different types of waste generated on the University campus.

Sr. No.	Types of Waste	Particulars
1	Solid wastes	Damaged furniture, paper waste, paper plates, food waste, etc.
2	Plastic waste	Pen, Refill, Plastic water bottles and other plastic containers, wrappers, etc.
3	E-Waste	Computers, electrical and electronic parts, etc.
4	Glass waste	Broken glass wares from the labs etc.
5	Chemical wastes	Laboratory waste etc.
6	Bio-medical Waste	Sanitary Napkin etc.





4.2 Waste management practices adopted by the University

University has implemented a "**Three dust bin**" waste collection system and has banned the use of plastic bags,



Figure: - 4.1 Three dustbin collection system on the university campus

Recommendation

It is recommended adopted 5 Bin Waste collection systems for collect different type of waste Generated in Institute premises.



Recommended 5 dust bin waste collection System





4.3 Waste collection points

The audit team also visited various departments, Admin building, MBA building, Workshop building, and Mess, to find out waste generation areas and waste collection points for further improvement. Details are given in the table.

Table: 4.2 detailed waste collection dust bin system

	Administrative and Academic Block					
Sr.No.	Location	Dustbin				
1	Basement	6				
2	First floor	6				
3	Second floor	6				
4	Third floor	2				
	Total	20				
	Education Block					
Sr.No.	Location	Dustbin				
1	Ground floor	4				
2	First floor	4				
3	Second floor	6				
4	Third floor	4				
	Total	18				
	Engineering Block					
Sr.No.	Location	Dustbin				
1	Ground floor	5				
2	First floor	6				
3	Second floor	6				
	Total	17				

Sr.No.	Location	Dustbin
1	Bhamashah International Hostel	14
2	Sanga Boys Hostel	10
3	Kumbha Boys Hostel	10
4	Pratap Boys Hostel	2
5	Panna Dhai Girls Hostel	4
6	SC Meera Girls Hostel	2
	Total	42

Observation: - Total 97 dustbins in the university campus. **It's Appreciable.**





END OF THE REPORT THANKS