

## **Manipal University Jaipur Driving Clean Energy and Energy-Efficient Technology Support for Government**

The global community faces escalating challenges due to climate change, amplified by carbon emissions and the depletion of natural resources. To counter these challenges, a shift to clean energy and energy-efficient technologies is imperative. Recognizing this urgency, Manipal University Jaipur has stepped forward to spearhead research, innovation, and policy support in this crucial arena.

Manipal University Jaipur serves as hubs for cutting-edge research, generating insights crucial for policymakers. The faculties and research centers conduct extensive studies to understand the viability, impact, and potential of clean energy solutions. Through reports, white papers, and direct collaborations with government bodies, universities provide evidence-based guidance that informs policy decisions. Manipal University Jaipur, research and development departments are driving forces behind the creation of new energy-efficient technologies. From solar panels to energy storage systems, Manipal University Jaipur is at the forefront of innovation, continually seeking ways to improve the efficiency and sustainability of energy production and consumption. Manipal University Jaipur offers specialized programs and courses focusing on clean energy and sustainable technologies. These initiatives equip students with the knowledge and skills required to support government efforts in implementing clean energy policies and technologies. Manipal University Jaipur collaborates with governments and industry partners to develop and implement strategies for clean energy adoption. These collaborations foster a fertile ground for practical applications of research findings, leading to the development of real-world solutions that align with government objectives. Manipal University Jaipur's outreach efforts also support local and global initiatives aimed at promoting clean energy and energy efficiency. They actively participate in climate action events, conferences, and policy discussions, contributing expertise and promoting sustainable practices.

The dedication of Manipal University Jaipur to research, inform policy, foster innovation, and educate the future workforce underscores the shift to clean energy and energy-efficient technologies. By continuously refining and implementing solutions, Manipal University Jaipur is supporting governments and paves the way for a more sustainable and resilient energy future.

In a world seeking sustainable solutions, the collaborative efforts between Manipal University Jaipur and government stand as beacons of hope. The knowledge exchange, innovation, and policy support from Manipal University Jaipur is integral to steering the world towards a future powered by clean energy and energy-efficient technology. Together, these partnerships form the backbone of progress, fostering a collective commitment towards a more sustainable and environmentally responsible energy landscape.



# Projects on Energy Efficiency







**MANIPAL UNIVERSITY  
JAIPUR**

*(University under Section 2(f) of the UGC Act)*

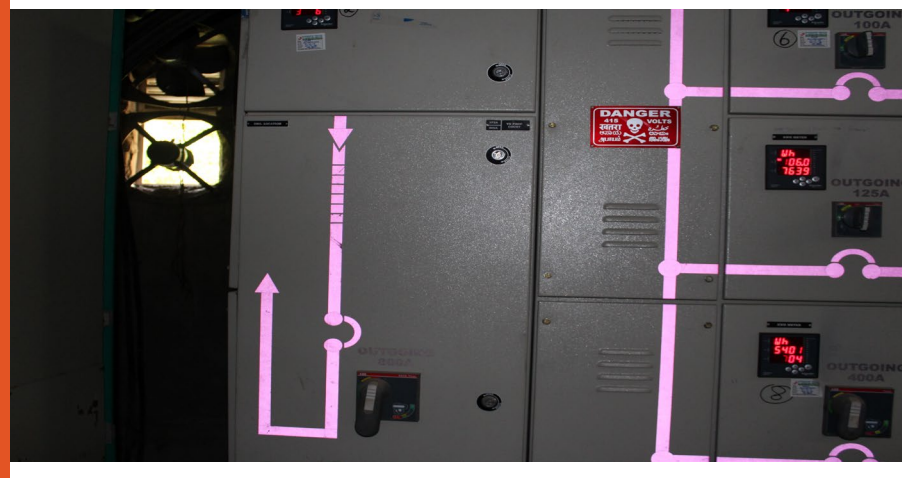
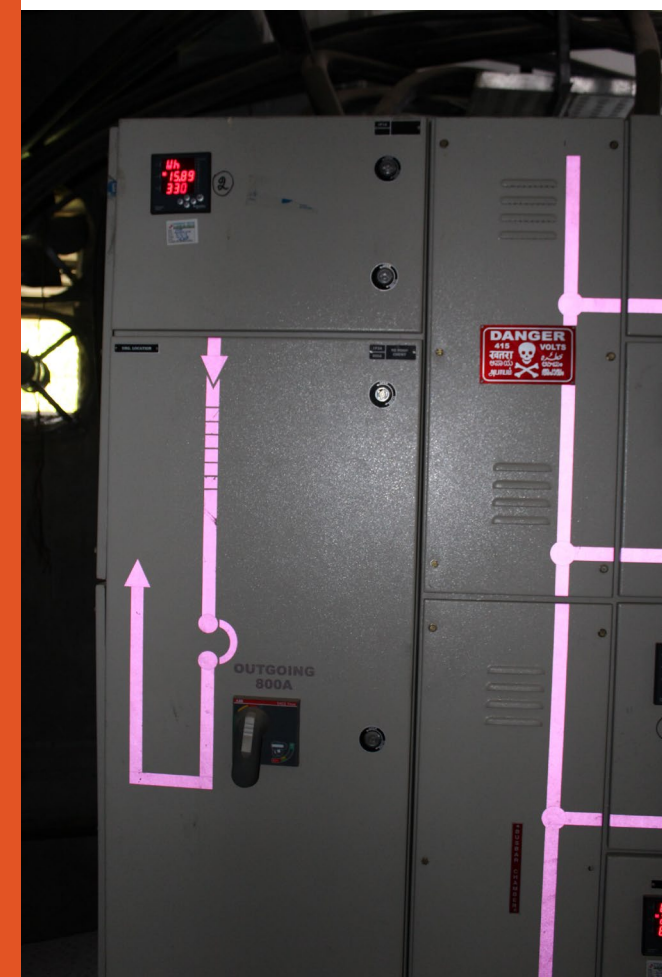
Clean And Smart Campus 2021

## RENEWABLE ENERGY SOURCES





# RESOURCE CONSUMPTION MONITORING





## RENEWABLE ENERGY UTILIZATION AT MANIPAL UNIVERSITY JAIPUR

Renewable energy Utilization is a key part of the design and development at Manipal University Jaipur. Hence, on site energy generation was given precedence to offset at least 50% of the total energy demand to achieve this solar p.v arrays are installed on the rooftops across all the major buildings in the University.

### Key Performance Indicators:

The approach of MUJ to race towards self sufficiency in Energy is by reducing overall energy demand of MUJ (Admin & Academic-1) wherever possible. Design optimization was the key aspect which is driving MUJ to achieve energy use reduction. The reduced energy will be met by on site generated solar energy

- Climate responsive design of the building is the key element in the reduced energy demands.
- Appropriately sized systems with energy efficient technology & controls further reduced the energy demands
- Design has considered the orientation of building to construct the service structures on roof to reduce the amount of self shading & shadow patches on roof to maximum energy harvest with the solar pv's.
- Constant increase in capacity of solar PV system to steady offset of conventional energy demands

➤ [Usage Details Report \(click here\)](#)

## ENERGY AUDIT



### ENERGY SAVING SUMMARY

Document ID: IPPL/EA/ND/19-20/01

S.No	Energy Conservation Projects	Annual Water Saving (KL)	Annual Energy Saving (KVAh)	Annual Monetary Saving in Lakhs	Investment (in lakhs) Rs.	Payback Period in Months	Co2 Emission Reduction in Ton	Page No
1	Avoiding use of transformer-1 during non-peak months		21,818	2.05	1.5	9	17.9	54
2	Maintaining 410-415 V instead of 430 V at Transformer-1		1,40,695	13.23	Nil	Immediate	115.4	55
3	Energy saving achieved by Chiller set point optimisation		13,745	1.29	Nil	Immediate	11.3	57
4	Energy saving by chiller plant optimisation		43,636	4.10	Nil	Immediate	35.8	59
5	Installation of Automation in Unitary AC		7,987.2	0.75	1.2	19	6.5	63
6	Replacement of Old AC by Inverter AC		3,840	0.36	1.2	40	3.1	63
7	Increase Re-use of Grey-Waste Water from laundry	4000		9.76	15.0	18	-	68
8	Energy saving by using fine bubble diffuser		44,460.6	4.26	5.0	14.2	36.5	71
9	Aggregation and optimisation of compressed air usage in STP		3,625.3	0.34	0.5	17.8	3.0	74
10	Installation of Energy efficient fans		2,40,000	22.56	90.0	48	196.8	79
11	Replacement of Inefficient Heat Pumps (Either by new heat pump or through staform hot water system)		49,332.8	5.1	7.8	18.5	40.5	81
12	Cleaning and Maintenance of Heat pumps to improve COP		39,926.3	3.8	6.0	19.2	32.7	83
13	Installation of Solar street light at peripheral roads		24,741.8	2.3	9.5	48.8	20.3	85
<b>Total</b>		<b>4000</b>	<b>6,33,809</b>	<b>70</b>	<b>138</b>	<b>24</b>	<b>520</b>	



Energy Audit Report



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## External Participation - Technology Driven Env. & Sustainable Solutions 28

Manipal University Jaipur, part of the Global Sanitation Learning Alliance a project by UNESCO-IHE & Bill & Melinda Gates Foundation

**BILL & MELINDA  
GATES foundation**

MUJ received an approved grant of 363,000=00 USD (2.6 Crores) from Bill & Melinda Gates Foundation through top Global Institute , IHE Delft Netherlands to run



- a) OnLine course in Non Sewered sanitation
- b) Diploma Courses in Non Sewered Sanitation
- c) MTech in Non Sewered Sanitation

**UNESCO/IHE DELFT**

and

**BILL & MELINDA GATES FOUNDATION**

Principal Investigator : Prof A D Vyas

Co PI : Dr Meena Kumari Sharma

Dr Monika Sogani

Mr Sagar Gupta

Duration: Aug 2019- Dec 2023





## Conference, Workshop, Seminars

1. Organized faculty development program on Waste Management during 2-6 November, 2020.
2. Expert lecture on “Community based research interventions in environmental science and engineering: the key to a sustainable and healthy society” by Prof. A.B.Gupta, from MNIT Jaipur.
3. Expert lecture on “Selection of Proper Waste Technology as part of Waste Management Infrastructure” by Prof Brajesh Dubey from IIT Kharagpur
4. Expert lecture on “Waste Technology on Faecal Sludge and Septage Management (ODF++)” by Prof Srinivas Chary Vedala, Director, Administrative Staff College, India
5. Waste Technology on business models for faecal sludge management” by Prof Dinesh Mehta, Professor Emeritus at CEPT University
6. Expert lecture on “*Waste Technology on Selection of Proper Waste Technology as part of Waste Management Infrastructure*” by Prof. A.B.Gupta, from MNIT Jaipur.





## External Participation - Technology Driven Env. & Sustainable - Projects

S. No.	Lead/Principal Investigator (PI)	Co-PI (If any)	Title of Project	Funding Agency
1	Dr Monika Sogani	Prof A D Vyas, Meena Kumari, Sagar Gupta	Delawas STP & its impact on socio economic conditions	Asian Development Bank Institute, Japan
2	Prof A D Vyas	Dr. Monika Sogani, Dr Meena Kumari Sharma and Mr Sagar Gupta	Short term actions in FSM, awareness in academic institutions	UNESCO/IHE Delft, Netherlands and Bill and Melinda Gates Foundation
3	Dr. Meena Kumari Sharma	Prof. A.D. Vyas & Mr. Sagar Gupta	Performance of low cost community based onsite sanitation system in Ambient Environment	DST, Rajasthan
4	Prof. A D Vyas	Dr. Meena Kumari Sharma, Dr Monika Sogani, Mr. Sagar Gupta	On line course on Faecal Sludge Management	UNESCO/IHE, Delft, Netherlands and Bill and Melinda Gates
5	Dr Monika Sogani	Dr Meena Kumari Sharma & Prof. A. D. Vyas	Enhanced biodegradation of organic pollutants as well as micro-pollutants	Science and Engineering Research Board (SERB), DST, Govt. of India
6	Prof Lalita Ledwani	Prof. A D Vyas, Dr Pushpendra Kr	Water sector Grant	Kurita Water Environment Fund, Japan

## Ongoing Projects of sustainable solution for society

### Final Flus

- Using hyperboloid mathematical model to separate solid and liquid mechanically



**Silage Solutions** works on developing products and processes to produce eco-friendly, affordable and high-quality items to replace single-use plastics, using crop residue which is otherwise burnt on the fields causing air pollution and respiratory diseases. It encourages farmers to use eco-friendly waste management techniques thus providing a secondary source of income.

Second

**Future Waste Technologies Limited:** a startup which is smartly manage the waste of a smart city. It has a waste managing app, place smart dustbins, smart waste collecting trucks, smart waste managing units for biodegradable, recyclable and non-biodegradable wastes. Thus, preventing any problems of waste.

**Astute Conurbation:** a project which is going to provide solution for waste management, water management by providing a new way to transfer it directly from home to waste treatment plant, and also going to bring technical advancement to our railway stations where we often see mismanagement, also further it is launching special purpose vehicle for different purposes. Also, it will be introducing Energy conservation products, Green energy building.

### GARBO

Aim to create awareness amongst common households by analyzing their everyday garbage and providing them with more environmentally friendly replacements.







## Ongoing Projects of sustainable solution for society



**SmartFarm** working with the aim of supporting rural India and will be the part of the program - "Start-up India, Stand-up India". It provides a platform comprising of rental services for agriculture machinery and Implements, audio-visual learning of schemes, technologies and methods, helps farmers in loan products and process & more.

### FATE (Farmer's Awareness and Transmission Enterprise)

Increasing farmer's communication with other farmers, sponsors, urban folk, so that they can come together & discuss common problems, irrespective of location; so that solutions can be developed

### GreenAcceleration

GreenAcceleration is the solution of a cleaner greener and healthier village by electrifying their lives. It work on an insect free village. our solution to this is a light which repels insect. And the electricity needed for the light to work comes from the road. It makes electricity from the road, and it is one of the cleaner and most ecological way of producing electricity. From this technology it can power the whole village if our product is laid over a stretch of 1 KM.

### Gellet

Due to the recent ban on petroleum coke as a fuel, industries are facing a shortage of alternative fuels. They propose converting agricultural waste and manufacturing it into fuel pellets with an innovative business model implemented through a website which acts a bridge between industries and farmer

### Irrigate

Physical fragmentation of land is currently a major problem. Farmers own a piece of land where he can cultivate certain crops. Considering we extract a couple of mass buyers or consumers for household purposes, we can bridge this gap between these producers and consumers by giving the land on lease to the consumers where the farmer receives the rent and cultivates certain crops/ provides poultry for the consumers.



## Major Projects Summary Status

### Budget Sanction and Expenditure: As on 20th Aug 2023

Sl. No.	Projects Description	Budget Sanction (₹ Cr)	WO Released (₹ Cr)	Expenditure (₹ Cr)	Major Remarks
1.	Academic Block-3	₹117.36 Cr	₹114.11 Cr	₹100.32 Cr	100% Work Completed
2.	“Destination Manipal” Experience Theatre	₹12.0 Cr	₹12.55 Cr	₹11.72 Cr	100% Work Completed
3.	Shifting of 132KV HT line by UG Cable	₹6.077 Cr	₹6.077 Cr	₹6.077 Cr	100% Work Completed invoicing pending
4.	MUJ Power Upgradation	₹6.50 Cr	₹3.49 Cr	₹2.14 Cr	Dg and Second Source
5.	Lecture Hall Complex	₹150.0 Cr	₹47.04 Cr	₹16.90 Cr	Substructure work completed 100%, Super structure 25%
6.	Hostel Blocks Girls and Boys	₹430.0 Cr	₹18.19 Cr	₹7.71 Cr	Substructure work completed 80%, Super structure WIP