200 m^3 Sewage Treatment Plant on Campus

The treatment facility available in the Marwadi University, Rajkot consists of Fluidized Media reactor (FMR) where a floating media of various shapes and sizes are used. The main objective of adding the media is to assign bigger surface area for bacteria to grow therefore maximum possible bacterial population in a limited volume can be ascertained. The FMR media material allows biomass concentration of 20-40 Kgs/m^3 material. The FMR consists of combination of biomass in attached as well as suspended form. High concentration of biomass enables reduction of aeration tank and in turn reduction in overall cost. Volume of the media shall vary from 6-25% based on the concentration of organic matter.

The wastewater generated from the University is having high turbidity so in order to clean the turbid water the FMR is installed which has not only controlled the turbidity but has also reduced the other parameters like Biochemical Oxygen Demand & Chemical Oxygen Demand.

The grey water is recycled to be used for the green plantation in the campus area. The figure 1-6 shows the installed Fluidized bed reactor in the Marwadi University

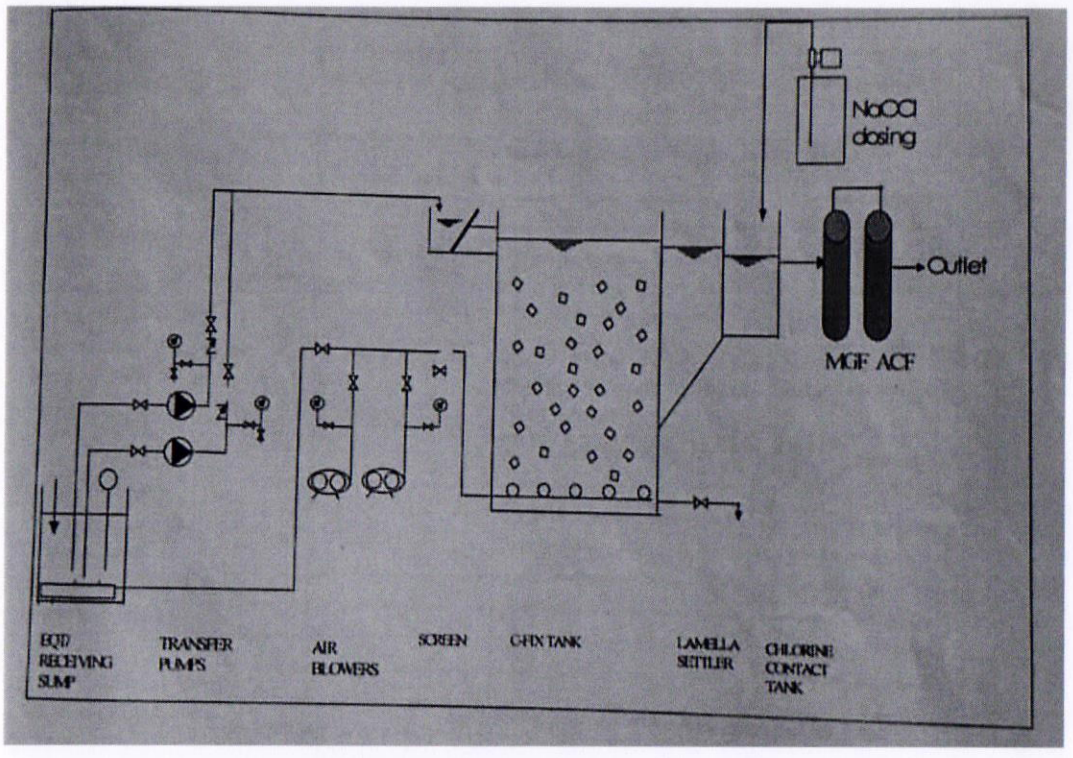

Fig. 1: The schematic diagram of the plant

Registrar
Marwadi University

MARWADI UNIVERSITY * RAJKOT *

ANALYSIS REPORT : STP WATER OUTLET

Test Report No / Ref.No. :- TA-440 **Date: 14-05-2022**

Name of Customer	Marwadi University
Address of Customer	Rajkot - Morbi Highway, Gauridad.
Date of Sample Collection	5/7/2022
Sample Collected By	Mr. Kalpesh Parmar
Sample Tested By	Mr. Raj Chapala, Mr. Avon Dobariya & Mr. Jitesh Joshi
Date of analysis starts	5/8/2022
Analysis conclude on	5/13/2022

Sr. No.	Parameters	Units	Test Method	Acceptable Limit	9:00 AM	1:00 PM	3:30 PM	7:00 PM
1	pH	-	APHA 23rd Ed.,2017,4500-H+B	6.5-8.5[a]	6.39	6.69	6.74	6.44
2	BOD	mg/L	APHA 23rd Ed. Method 2540-C	30[b]	146	142	132	134
3	COD	mg/L	APHA 23rd Edition 2130B	100[b]	258	252	244	248
4	TSS	mg/L	APHA 23RD Edition 2540 D	5[b]	939.8	323	142.6	300.6
5	Turbidity	FNU	APHA 23rd Edition 2130-B		418	16.6	22	24.1
6	Oil and Grease	mg/L	APHA 23RD Edition 5520 G	10[b]	191	200.33	116.66	230
7	Ammonical Nitrogen	mg/L	APHA 23RD Edition 4500-NH3 C	5[a]	26.21	28.67	22.74	21.73

***NOTE**

1. The results refer only to the tested samples and applicable parameters. Endorsement of products is neither inferred nor implied.,BDL= Below Detection Limit, MDL = Minimum Detection
2. Samples will be destroyed after 10 days from the date of issue of test report unless otherwise specified.
3. This report is not to be reproduced wholly or in part or used in any advertising media without the permission of the Laboratory in writing.
4. This office is not responsible for the authenticity for the samples not collected by our officials.
5. Total liability of our laboratory is limited to the invoiced amount. Any dispute arising out of this report is subject to Gujarat Jurisdiction only.
6. Permissible Limits: as per Schedule VI of EPA Rules-1986

*ND : Not Detected, BDL : Below Detection Limit, -- : Not Applicable

Testing Incharge

Team Leader

MARWADI UNIVERSITY * RAJKOT *

MARWADI EDUCATION FOUNDATION

Rajkot - Morbi Highway, Near Gauridad,
Tal. Dist : Rajkot - 360003, Gujarat, India

GST No.:24AACTM2114K1ZV

WORK ORDER

TECHNOGAS SYSTEMS PVT LTD		
B-17 Maruti Industrial Estate, Bombay Conductor road Phase -1 GIDC Vavta Ahmedabad-382445 Tel : -, Cell : 99090 18271 E-Mail:naimish.mehta@technogassystems.com GST No.:24AACCT0944K1ZD	**Po No.**	**41000571**
	WO Date	**10-04-2021**
	Reference No. (PR)	**2958**
	PreApproval No .	**2447**
	Department	**CIVIL-CONSTRUCTION**
	Location	
	WO Ref.No.	**17530**

Subject : Purchase Order of supply / Service for **STP INSTALLATION AND COMMISSIONING WORK AGAINST PR NO.2958**

With reference to your offer referred to above, in response to our enquiry, We are pleased to place the purchase order for supplying us the following materials as per the specifications, delivery schedules, payment terms and conditions mentioned in our enquiry form and agreed upon in your offer letter.

Sr. No.	Item Code	HSN Code	Item Description	Qty	UOM	Unit Price INR	Disc (%)	Taxable Amt. INR	CGST (%)	CGST Amt.	SGST (%)	SGST Amt.	Amount (INR)
1	CI03899	9987	Check and service all electro mechanical equipment e.g. pumps, air blowers, etc. Replace bearings and mechanical seals of all pumps and air blowers where applicable. Parts required, if any will be charged extra at actual, Only labour charge	1	AU	15000.00	8.00	13800.00	9.00	1242.00	9.00	1242.00	16284.00
2	CI03900	9987	Providing and fixing Replace all instruments e.g. pressure gauge, temperature gauge, pressure switches etc.	1	SET	24000.00	8.00	22080.00	9.00	1987.20	9.00	1987.20	26054.40
3	CI03901	9987	Check and repair existing control panel wairing and make it opretional including all material and labor	1	AU	35000.00	8.00	32200.00	9.00	2898.00	9.00	2898.00	37996.00
4	CI03902	9987	Service all valves, replace gaskets , all pipeline connection and make it leak proof and operational, Relay cables properly above cable trays, wherever required and possible	1	AU	12000.00	8.00	11040.00	9.00	993.60	9.00	993.60	13027.20
5	CI03903	9987	Check and fix aeration diffusers inside tank and also equalization tank , Only labour charge, Parts required, if any will be charged extra at actual.	1	AU	5500.00	8.00	5060.00	9.00	455.40	9.00	455.40	5970.80

MARWADI UNIVERSITY * RAJKOT *

With reference to your offer referred to above, in response to our enquiry, We are pleased to place the purchase order for supplying us the following materials as per the specifications, delivery schedules, payment terms and conditions mentioned in our enquiry form and agreed upon in your offer letter.

Sr. No.	Item Code	HSN Code	Item Description	Qty	UOM	Unit Price INR	Disc (%)	Taxable Amt. INR	CGST (%)	CGST Amt.	SGST (%)	SGST Amt.	Amount (INR)
6	CI03905	9987	Commissioning and testing of STP system to run at max capacity for max. up to 30 Days . provide technical consultancy for obtaining maximum efficiency of plant. Supervision at site in General shift for assisting commissioning activities. Overall responsibility to achieve desired results as per GPCB . Including maintain record of chemicals During the commissioning ,Including maintain log book of STP operation during commissioning.	1	AU	90000.00	8.00	82800.00	9.00	7452.00	9.00	7452.00	97704.00

Total Basic Value	**181500.00**
Total Discount	**14520.00**
Total CGST	**15028.20**
Total SGST	**15028.20**
Total GST Amount	**30056.40**
Total Order Value	**197036.40**

Rupees One Lakh Ninety Seven Thousand Thirty Six and Paise Forty Only

Terms & Conditions :

Incoterms :
Payment Terms : As per Purchase Order Terms & Conditions

1. Prices Basis: At MEFGI Site
2. Payment: 25% advance & 75% after receipt of materials / invoice / work completion, site engineer conformation whichever would be later: Payment will be made by RTGS/NEFT or A/C Payee's Cheque only.
3. Taxes as applicable to contract works at the prevailing rate in the state of Gujarat will be deducted from the payment.
4. Work completion within 2-3 month after receipt of work order.
5. This Work order is including materials and labour cost.
6. Qty variation +/- 5% acceptable.
7. Only finished work should be measured and paid at actual basis.
8. Transportation charges included in Total Order Value
9. Forwarding, Loading & Unloading charges from Supplier office/ware house to site are of included in Total Order Value.
10. If work would not be completed within the timeline, per week 1.5% compensation of total Order value would be deducted.
11. Defect liability period will be 18 month of entire work (Materials and Labour) from the date of final bill certification . In defect liability period you will immediately attend and rectify the defect within 7 days from the date of notice of defect, without any additional cost.
12. All relevant I.S. / B.I.S /amendments/guidelines shall be scrupulously followed for carrying out the work.
13. The Service provider shall make good any defect or damage to any part of the work carried out which may be noticed within Defects Notification period after handing over of the scheme by the Service provider.
14. The Service provider has to take the Workmen Compensation Policy for the work entrusted to him and a copy of the same shall be presented to Employer within a week after signing the agreement
15. The rates shall remain firm and fixed till the whole of the assigned job is completed in all respects and no escalation whatsoever is admissible in this regard.
16. You shall abide by all rules and regulations of all acts of Government/Local body/statutory authorities pertinent to the execution of this contract.
17. The payable rates shall hold good for execution of works at all heights, depths, lifts, leads, shapes and sizes unless otherwise specifically mentioned in the description of item in the work order.
18. You shall be responsible for proper coordination with other agencies operating at the site of work so that work may be carried out concurrently, if necessary, without any hindrance. The Engineer-in-charge shall resolve disputes, if any, in this regard, and his decision shall be final and binding.
19. You shall be solely responsible for damages to works of other agencies if any, committed by you and you shall make good the losses incurred/claimed by other agencies
20. Drains, pipes, cables, overhead wires and similar services encountered in the course of execution of works shall be guarded from being damaged by you at your own cost. Should you damage any mains, pipes, cables or lines (whether above or below ground etc), whether or not shown on the drawings, you shall make good or bear the cost of making good the same without delay to the full satisfaction of the Engineer-in-charge
21. It shall be solely your responsibility to provide, operate and maintain all necessary construction / Fabrication / errection equipments, scaffoldings and safety gadgets, cranes and other lifting tackles, tools and appliances to perform the work in a workmanlike and efficient manner and complete all the assigned jobs as per time schedule. In case any of these equipments are Provided by EMPLOYER, to enable smooth working, this shall not absolve you of your responsibility to operate and maintain them in top condition
22. You shall take every care for cleaning the working site from time to time for easy access to work site and also from safety point of view. House keeping shall be your primary responsibility and shall not occur by default.
23. EMPLOYER., reserves the right to cancel this 'Work Order' at any time for any reason whatsoever and in such an event, you shall not be entitled to any compensation on any account whatsoever.
24. You shall adhere to safe construction practices and guard against hazardous and unsafe working conditions to the full satisfaction of the Engineer-in-charge
25. You shall be solely responsible for the safety of your employees, workmen and liability of their total security and safety wholly rests with you. EMPLOYER shall in any event be not responsible for the same. You shall also be solely responsible for all other damage to any property arising out of and incidental to your negligent or defective workmanship
26. In the event of any accident causing injury resulting into partial or total disability or even causing death, you shall be totally responsible and shall absolve EMPLOYER from all damages or expenses related to it.
27. In case of indiscipline, misbehavior with consultant, client or any EMPLOYER's representative by any of your employees, the same shall result in immediate discharging of the concerned employee from the site of works. We shall not be responsible for any cost or damages in that eventuality.
29. Serviceable materials left surplus with you after completion of the work, other than waste and cut pieces, which will not be taken back being unserviceable, shall be returned by you to our Project Stores in sound condition at your cost. To ascertain whether an item to be returned is 'serviceable' or 'unserviceable', the decision of the Project Manager shall be final and binding on you.

Marwadi University

Flushing water demand fulfilled by treated water

Total Capacity of Treated Water tank = 200 cum

Total Capacity of Treated Water tank = 200,000 Litre/day

Daily Usage

Per Capita Usage of Flush Water in Hostel = 35 Litre/day

No. of Users = 2000

Per Capita Usage of Flush Water in Main Building = 15 Litre/day

No. of Users = 5000

Total Usage = 1,45,000 Litre/day

Hence, the demand of flush water is fulfilled by treated water from STP. Remaining treated water is used for gardening purpose.

ST. THOMAS SCHOOL RAJKOT

English Medium

Recognized by Guj Govt.

School Index No: 64.566

Ref No:

Date: 12/04/2022

To
The Registrar
Marwadi University
Rajkot

Dear Sir,

On Behalf of St. Thomas School, I Would Like to thank you for the generous donating once again to our school with Ten Computer and Ten Projectors Received on 09th April 2022. We are thankful to Marwadi University for providing us with Computers and Projectors.

We understand the importance of learning computers for students and that's why we have recently constructed a computer lab and now with your kind support, we have Twenty computers in our Computer lab and Twenty Projectors for Class Rooms, A.V Room, which will help us to teach our students.

We would again like to extend a warm thank you to Marwadi University for helping us and our students.

Sincerely,

Varghese Nibesh

Trustee
St. Thomas School Rajkot

St. Thomas School * Rajkot *

(MANAGED BY: ORTHODOX DIOCESE OF AHMEDABAD OWNED BY ST. THOMAS TRUST, RAJKOT)

Opp. Cosmoplex Cinema, Kalawad Road, Near Mota Mava , Rajkot – 360005
Ph(0281) 26251312. Mob: +91-9313114745. Email: stthomasschoolrajkot@gmail.com

MARWADI UNIVERSITY * RAJKOT *

ST. THOMAS SCHOOL RAJKOT

English Medium

Recognized by Guj Govt. School Index No: 64.566

Ref No:

Date: 17/04/2019

To
The Registrar
Marwadi University
Rajkot

Dear Sir,

On Behalf of St. Thomas School, I Would Like to thank you for the generous donation to our school with Ten Computer and Ten Projectors Received on 15th April 2019. We are thankful to Marwadi University for providing us with Computers and Projectors which will help us provide our student with technical education, which is must in present time.

The main objective of the school is to provide quality education to the children belonging to the lower- and middle-class section of the Society. The motto of the school is providing quality education at low cost with an aim to bring about overall development of the children especially for those belonging to the lower strata of the society who cannot afford education at high cost

Considering the present times, we understand the importance of learning computers for students and that's why we are developing a computer lab and now with your kind support, we have Ten computers in our Computer lab and Ten Projectors for Class Rooms which will help us to teach our students.

We would again like to extend a warm thank you to Marwadi University for helping us and our students.

Sincerely,

Varghese Nibesh

Trustee
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St. Thomas School Rajkot

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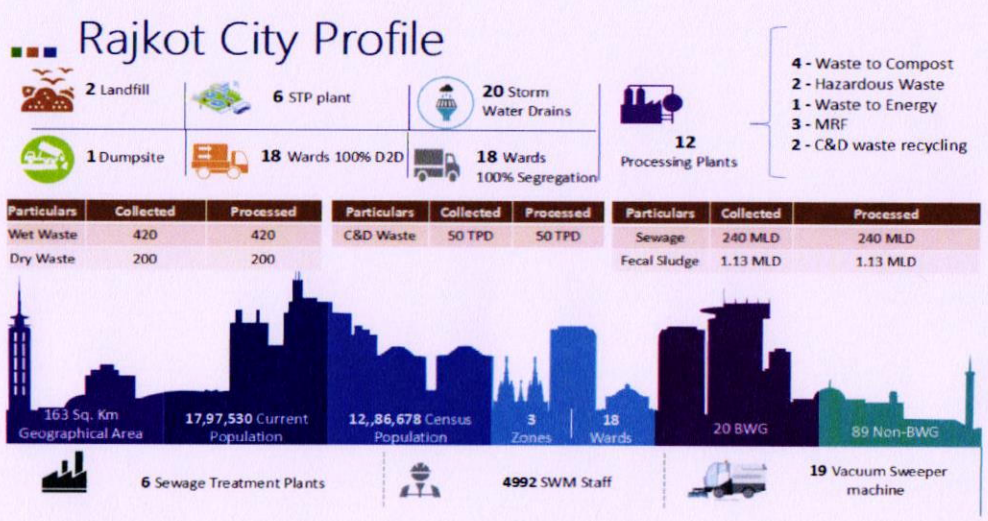
MARWADI UNIVERSITY RAJKOT

India with a population of 1.34 billion, associated with one of the fastest technological advancement worldwide, generates a large amount of municipal solid waste (MSW). Approximately 56 million tons of MSW is currently generated and estimated to increase by 5% per annum.

The reason behind the increased rate of municipal waste generation and its compositional complexity is the rapid growth of population, economic development, and migration of individuals from rural to urban areas. Due to this, only one method for waste disposal would not be enough for environmental sustainability.

In country like India, open dumping and incineration without energy recovery is observed as a common practice of waste management (Sharma & Chandel, 2016). Henceforth, selection of a suitable waste management with minimal environmental impacts becomes a major concern for urban as well as rural areas of developing countries. Proper municipal solid waste management (MSWM) requires precise statistics of the waste generation amount rate, composition of the waste and physico-chemical characteristics. If waste is managed improperly then it may lead to adverse impact on environment as well as economy of the country.

In the city Rajkot with the population of about 25 lakhs the waste management as per the hierarchy of solid waste management.



With an average daily waste generation of 0.5 kg per capita per day, the waste collection efficiency of the city is 100% but collected waste is not segregated. Municipal corporation is able to treat only 7-10% of the total collected waste (RMC Report, 2017) and more than 90% of waste is directly dumped at the Nakrawadi landfill site (fig. 1.2) with an area of 11 acres land and 12 kilometres away from the city. There are total two cells at the landfill, out of which one cell has been covered and the other one cell is going to be operated for the landfilling.

Waste Management at Marwadi University

Gujarat's Rajkot-based Marwadi University (MU) has received the prestigious One District One Green Champion award conferred by the Mahatma Gandhi National Council of Rural Education (MGNCRE), Ministry of Education, for the district of Rajkot. As a proud recipient of this 'Swachha' Award, especially during Covid-19 times. the University reaffirms its commitment to sustainability and impactful environmental advocacy.

Prof. (Dr) Sandeep Sancheti, Provost, Marwadi University says, "A 'green campus' and sustainability-oriented curriculum is a priority area for Marwadi University. Here, environmental issues are integrated into student life through both extracurricular activities and academics, whether that's in their coursework. dissertations or work placements. As a step ahead. the University also offers degrees in sustainable agriculture and environmental engineering. It's not just about looking to reduce carbon footprint and increase recycling initiatives. As a truly sustainable institution. we are also looking at its impact on the wider community."

Speaking on materializing a cleaner and greener world. Jeet Marwadi, Trustee, Marwadi University says, "The On-campus Marwadi University Innovation, Incubation. and Research Centre (MUIIR) has signed MOUs with Energy Swaraj Ashram, GUJCOST, and T-HUB. It is a strong step in encouraging a sustainable environment through start-ups and entrepreneurship.

Marwadi University has a beautiful campus of 23 acres (9.3 ha). The college’s main building is on the bank of the Nari River. The whole campus is divided in 8 blocks namely A, B, C hostel, the Main building, PG Building and Law Building, and Canteen Building. The college has also adopted the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero environmental footprints, positive impact on occupant health and performance, and 100% of graduates demonstrating environmental literacy. The goal is to reduce CO2 emissions, energy, and water use while creating an atmosphere where students can learn and be healthy. The college administration works on several facets of 'Green Campus' including Water Conservation, and Tree Plantation. Waste Management, Paperless Work, and Alternative Energy.

The main objective of the solid waste management system on the campus is to promote Environment Management and Conservation on the College Campus. The purpose of the currently available system is to identify. quantity. describe and prioritize the framework of Environment Sustainability in compliance with the applicable regulations, policies, and standards.

Organic kitchen waste and garden waste are being converted to Vermicompost and Some Kitchen waste is collected by the farmer to feed the cattle also. The segregated waste that can be recycled is sold for recycling to the Vendor.

Waste is transferred to municipal waste management units. Municipal Solid waste collection and disposal through Rajkot Municipal corporation. A small-scale water treatment plant is installed on the campus to treat the sewage water before releasing it.

Project report-Reaping wealth from waste by Vermicomposting

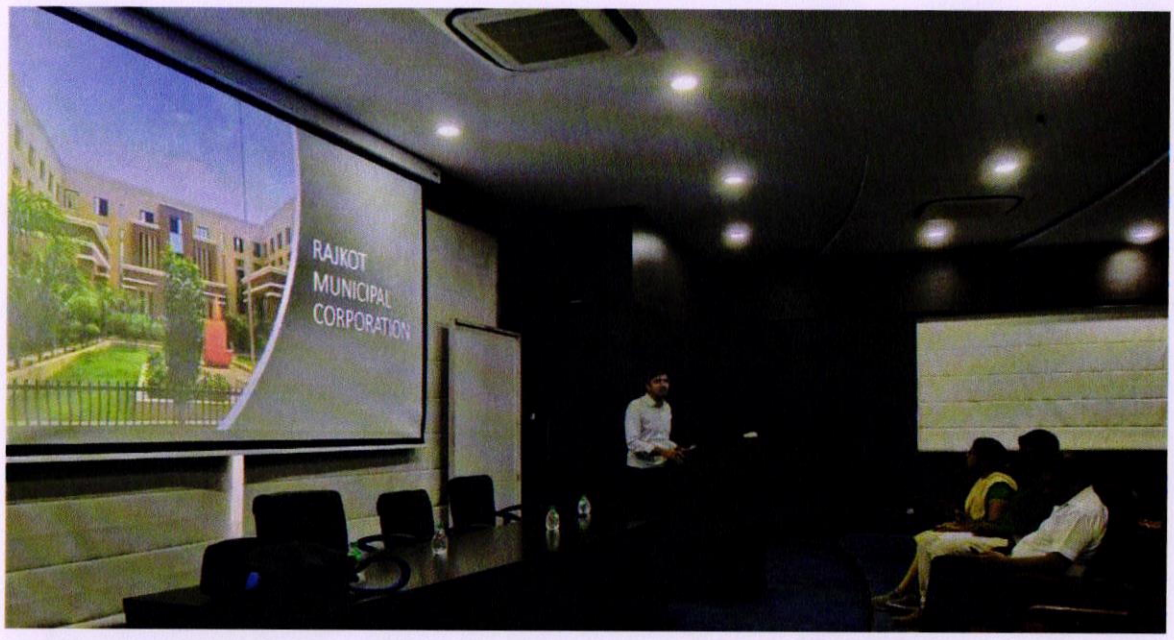
The potential project is to manage solid waste by the process of vermicomposting and then translating it to village Bedi and others to solve the problem of eutrophication due to excessive use of chemical fertilizers and improper solid waste management.

It is designed under EPICS-Design thinking by Dr. Archana Sharma and Dr. Amarpreet Singh Arora of Environmental Sc. & Engg. Dept. along with the students of PG I Year. The prototype was prepared and is now being executed at the Marwadi University campus for kitchen and garden waste management. The estimated cost of the mini project is Rs.3.28.9001.

Analysis of Vermicompost was one to determine the quality of compost prepared. It is being used in student projects. There is a plant for kitchen and garden waste management. Three barrels of kitchen waste are converted to Vermicompost. Which is applied to gardens and also used for research purposes by the students.

Many M.Phil and M.Tech. Projects are guided on Solid waste Management and have received the Best Scientist Award from the Nature Science Foundation (2021), in the area of Municipal and industrial Solid Management.

AWARENESS PROGRAMME

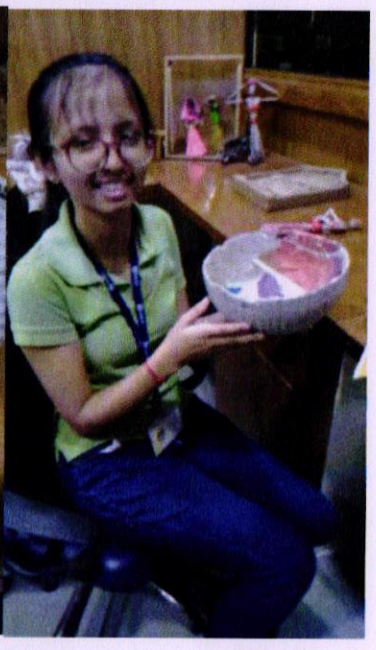


Expert talk on World Environment Day 4 June 2022

Awareness programmes by students and faculties are also conducted for Villages nearby.

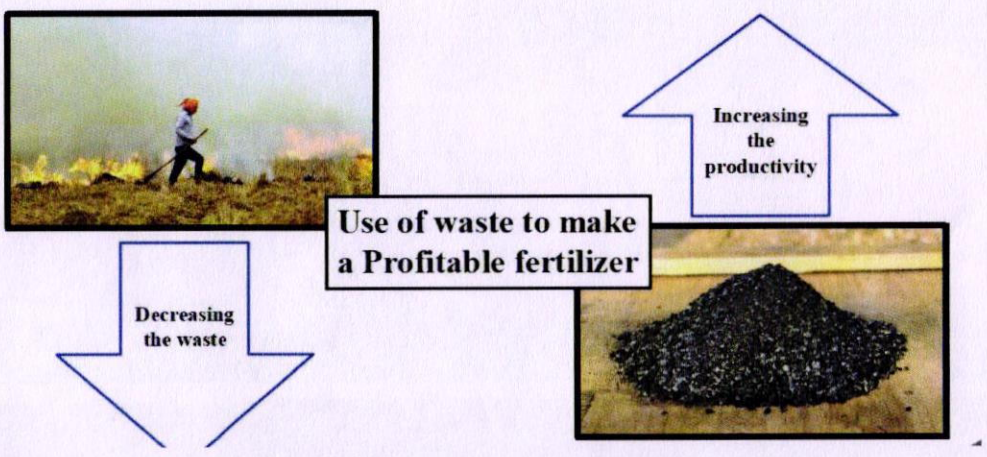
World Clean up Day Celebration for spreading awareness for waste utilization, organic manure and plantation.

Proposal for paper recycling and paper products has been approved and in its initial stage. 20 tons of waste paper is generated which is being utilized by the students under the project at MUIIR Centre under the mentoring by Dr. Archana Sharma.



Various projects on Waste Management completed

- Biochar: Restoration of Soil Quality and The Study of Physical Parameters of Plants



Efficacy Study Of Vermicompost Using Fly Ash And Cocopeat

Study of efficacy of Vermicompost.

Waste to resources : A Sustainable approach