



**MANAV RACHNA  
UNIVERSITY**

Declared as State Private University vide Haryana Act 26 of 2014



**13 CLIMATE ACTION**



# PROGRESS REPORT 2022-23

**Manav Rachna University**

Declared as State Private University vide Haryana  
Act 26 of 2014





SAPLING ADOPTION PROGRAMS



SDG AWARENESS INITIATIVES



YOUTH MARCH FOR ENVIRONMENT



WATER SAVING CAMPAIGNS



COMPETITIONS FOR SENSITISATION



13 CLIMATE ACTION



MEETING AMBASSADORS OF SUSTAINABILITY



BUTTERFLY GARDEN INAUGURATION



PLANTATION DRIVES



BUTTERFLY GARDEN



AWARENESS DRIVES IN VILLAGES



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# 1. Preamble

The visionary founder of Manav Rachna University has an ideology of commitment to the society and sustainability of the environment hence integrated into the mission and vision of the University. MRU involves students efficiently to make them aware about the environmental concerns and sustainable methodologies and seek them to forefront the mission with massive spreading of awareness. Army of Green warriors is being raised in Manav Rachna who would be spearheading this movement to spread the message of saving environment and attaining carbon neutrality to masses. To make our campus carbon-neutral, green and to make students environmentally conscious citizen we have initiated few initiatives that makes the youths as torch bearer. Manav Rachna University also emphasizes empowering youth as "Green Warriors" to lead environmental sustainability efforts. The university believes in leveraging youth potential to create a greener, more sustainable future, starting with actions at home, in the university, and at workplaces. Through this initiative, Manav Rachna aims to instill ecological consciousness and carbon-neutral practices on campus, encouraging students to become proactive, problem-solving leaders dedicated to sustainability within their chosen careers. This



movement fosters an environmentally responsible community, equipping youth to drive societal progress and sustainability for future India.

MRU recognizes the urgent need to address climate change and its devastating impacts. Aligned with the United Nations Sustainable Development Goal (SDG) 13: Climate Action, MRU has taken significant strides to mitigate climate change and promote sustainable practices. The university has implemented a variety of initiatives, including:

**Green Campus Initiatives:** MRU has adopted eco-friendly practices across its campus, such as energy conservation, waste reduction, and water conservation.

**Research and Innovation:** Faculty members and students at MRU conduct research on climate change, renewable energy, and sustainable technologies.

**Awareness and Education:** The University organizes workshops, seminars, and campaigns to raise awareness about climate change and its consequences.

**Community Engagement:** MRU collaborates with local communities to promote sustainable practices and climate resilience.



Partnerships: The university partners with government agencies, NGOs, and industry to implement joint initiatives and share best practices.

By taking proactive steps to address climate change, MRU is contributing to a more sustainable future for generations to come.

## **2. Manav Rachna University Green Auditing for Sustainable Campus Practices**

The green auditing outlines an environmental assessment conducted by a university. This audit systematically evaluates the environmental impact of the university's activities, focusing on sustainability in areas like waste management, water usage, air quality, energy consumption, and carbon footprint. Green auditing is described as a tool to identify, quantify, and analyze the university's resource use and its environmental impacts, with the goal of enhancing eco-friendly practices. This includes reducing resource consumption, promoting recycling, and minimizing waste. The process also raises awareness among staff and students, fostering a sense of environmental



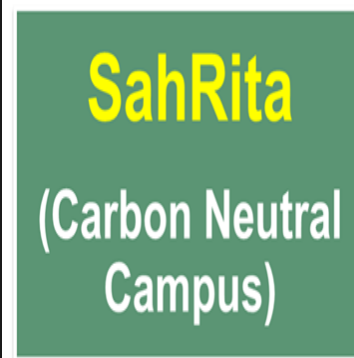
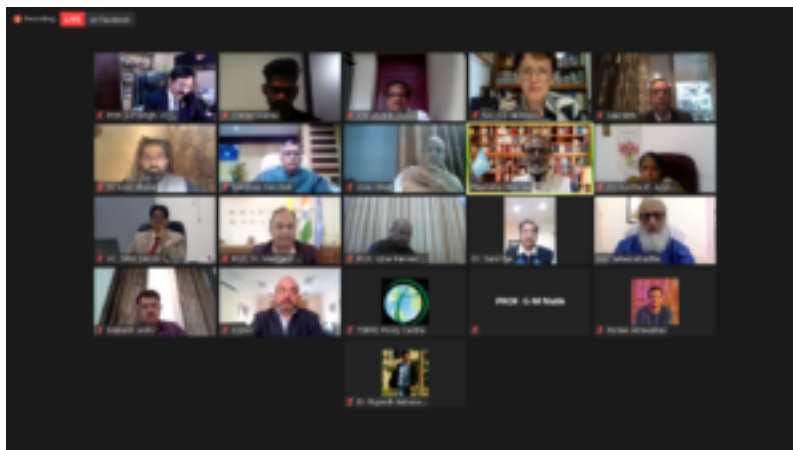
responsibility. Key audit steps include data collection, site inspections, and a review of institutional policies and activities. The audit uses indicators such as energy consumption from electricity and fossil fuels, water usage, soil quality, vegetation, and carbon footprint. By pinpointing unsustainable practices, the audit helps the university shift towards greener operations, aligning with SDG 13's focus on climate action.



## 3. MRU Commitment towards NET

### Zero

Manav Rachna University is involved with more commitment in achieving the significant goal of our Hon'ble Prime Minister to reach net zero carbon emissions by 2045 from all the wider sources. This initiative encompassed all sources of greenhouse gases as outlined by the World Resources Institute's Greenhouse Gas Protocol (GHG Protocol). As part of this commitment, the institute aims to reduce its Scope 1 and 2 emissions by 60-65% by 2035.



Meeting of Carbon Neutral Campus Committee





Here are the key strategies and action plans of MRU for Enhanced Carbon Reduction in the coming years:

- Gradually reduce energy dependence on the Haryana State Electricity Board (HSEB) by expanding the installation of solar panels.
- Convert or replace diesel generators with natural gas (NG) or green hydrogen in a phased manner.
- Develop strategies to alleviate congestion at the campus entry and exit points.
- Minimize food waste generation.
- Reduce paper usage through technological solutions.
- Utilize generated biogas for kitchen operations.
- Reassess the GHG emission inventory for greater accuracy.
- Explore additional renewable energy sources, such as solar, for the campus.
- Promote carpooling and shared transportation among stakeholders.
- Encourage the use and procurement of biodegradable and recyclable materials.
- Increase the use of natural light through technological innovations.



- Provide training to stakeholders on using eco-friendly products and reducing plastic waste.
- Promote frequent donation and reuse of unused items.
- Raise awareness about the benefits of consuming locally sourced, in-season fruits and vegetables.
- Organize health check-ups for faculty and staff, and encourage them to register for organ and tissue donation.
- Conduct book donation drives to provide underprivileged children in nearby villages with educational resources.
- Hold sessions to promote the "Vocal for Local" initiative.
- Support disaster relief efforts by organizing campaigns to collect essential materials during national crises.

### **CERTIFIED ENVIRONMENT MANAGEMENT SYSTEM AT MRU**

Manav Rachna University (MRU) demonstrates a strong commitment to environmental sustainability through its comprehensive environmental management system. The university prioritizes eco-friendly practices and undergoes regular surveillance audits as part of its dedication to maintaining its Environment Management System (EMS). MRU's EMS complies with the globally recognized ISO 14001:2015 standard for environmental management, and it has been certified by Inter Cert Certification Services Private Limited.



**CERTIFICATE OF REGISTRATION**

INTERCERT hereby certifies that the Environmental Management System of

**MANAV RACHNA UNIVERSITY**

(Declared as State Private University vide Haryana Act 26 of 2014)

Sector – 43, Delhi–Surajkund Road, Faridabad – 121004, Haryana, India

Has been successfully assessed as per the requirements of

**ISO 14001:2015**

For the scope of

**Education, Research, Industry Alignment & Additional Services.**

Initial Certification Date : December 26, 2022

Certificate Issue Date : December 26, 2022

Surveillance Validity Date : December 25, 2023

Recertification Date : December 25, 2025

Registration Number: IC-EM-2212156



*Handwritten signature*

Issued on behalf of InterCert  
Head - Certifications



The validity of this certificate can be verified at [www.intercert.com](http://www.intercert.com) or through email at [info@intercert.com](mailto:info@intercert.com). This certificate is the property of INTERCERT INC, 2001 Timberloch Place - Suite 500, The Woodlands, Texas 77380, United States and must be returned on request.

This ISO 14001:2015 certification highlights MRU’s proactive approach to reducing its environmental impact, ensuring compliance with environmental regulations, and continuously improving its sustainability efforts. The regular audits underscore the university’s commitment to minimizing its carbon footprint and promoting sustainable practices. MRU serves as an exemplary educational institution that not only imparts knowledge but also upholds and implements eco-conscious practices in its everyday operations. The



initial certification date is December 26, 2022, and it remains valid until December 25, 2025, with surveillance validity until December 25, 2023.

Green Chemistry Network is an initiative by the Chemistry Program which organizes conferences on sustainable development every year while Peace Club is another feather in MRU's cap which undertakes various activities relating to peace and sustainability. Manav Rachna University became the member of Smart Campus Cloud Network and took a voluntary pledge to develop the roadmap towards making University carbon neutral on December 12 2020 in virtual event NOT Zero Net Zero organized by TERRE. Faculty and students' committees have been formed to make the campus Carbon neutral. The university Art Gallery provides students hands-on learning experiences in visual arts, exposing them to a diverse range of artistic styles and mediums thus enabling them to grow creatively.



## **4. Prominent Workshops / Seminars /Training Programmes organized for Students and Faculty Members**

### **International conference on Green and Sustainable Chemistry 2022**

The International Conference on Green and Sustainable Chemistry 2022, sponsored by SERB-DST, DRDO, India, and NHPC, was held at Manav Rachna University from November 17<sup>th</sup> to 18<sup>th</sup>, 2022. The conference aimed to bring together experts from academia, industry, NGOs, policymakers, and other relevant stakeholders to exchange and disseminate knowledge and ideas that promote the development of green and sustainable chemistry. The theme of the conference was "Green Chemistry towards Carbon Neutrality," which is of great significance in today's world. The conference featured a wide range of topics, including chemical energy conversion, catalysis for bulk and fine chemicals, pharmaceutical production, and the design of sustainable chemical processes.





## World Environment Day Poster Making Competition

The World Environment Day Poster Making Competition, held on June 10, 2023, was organized by the Manav Rachna Centre for Peace and Sustainability with 31 participants. The primary purpose of the event was to raise awareness about environmental conservation and to inspire a sense of responsibility for maintaining a clean and pollution-free environment. The competition encouraged participants to creatively express their commitment to protecting the planet through art, highlighting themes such as the beauty of nature and the urgency of addressing environmental threats. The event provided a platform for participants of various backgrounds to use their artistic talents to convey important environmental messages. It emphasized the power of creativity in fostering change and reinforced the collective responsibility of safeguarding the environment for future generations. The competition not only showcased artistic expressions but also served as a call to action for environmental stewardship.



MANAV RACHNA UNIVERSITY  
MANAV RACHNA CENTRE FOR PEACE  
AND SUSTAINABILITY

Environment Day

Poster Making Competition

Submission based event + Clan points for all!!

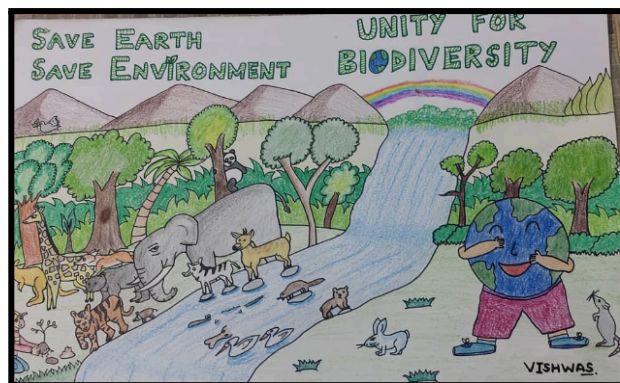
Date: 10th June, 2023

event.mrcps@mru.edu.in

For more details:

Simran  
9873268163

Diya  
9582749009



Online Poetry Competition



The online Poetry Competition on June 11, 2023, organized by the Manav Rachna University, aimed to commemorate World Environment Day by inspiring participants to creatively express their thoughts on environmental issues. With 14 participants, the competition encouraged individuals to use poetry to reflect on the significance of environmental conservation. The event successfully raised environmental awareness and fostered creative engagement, with participants expressing their emotions and ideas on topics like climate change and biodiversity. The winners were recognized for their outstanding contributions: Ekta Goyal for her impactful message on conservation, Vivek Singh for his insightful poetry on climate change, and Simran Chhabra for her vivid portrayal of nature preservation. Overall, the event achieved its goal of promoting environmental awareness through artistic expression and highlighted the role of poetry in advocating for a sustainable future. The enthusiastic participation further emphasized the importance of addressing environmental challenges.



On July 28, 2022, the Manav Rachna University partnered with Jagruti Sewa Trust to organize a visit to Government School, Sector 16, Faridabad. The purpose of the event was to promote environmental sustainability and enhance students' well-being through a plantation drive and meditation and yoga sessions. The event began with a plantation drive, where students, volunteers, and staff planted saplings of local tree species to support biodiversity. Following the drive, certified instructors conducted meditation and yoga sessions, teaching students basic breathing techniques, yoga asanas, and meditation practices to help reduce stress and improve concentration. Additionally, interactive workshops educated students on the importance of trees, biodiversity, and environmental conservation. This initiative not only contributed to environmental preservation but also fostered mindfulness and well-being among the students.



### Cleaning drive at Faridabad Railway Station

On June 22, 2023, the Manav Rachna Centre for Peace and Sustainability organized a cleaning drive at the Faridabad Railway Station, with dedicated participants.



Station, with dedicated participants.

Volunteers engaged in clearing litter,

improving hygiene and proper sanitation, and fostering a sense of community responsibility.





## 5. Policy on Energy Consumption:

### Green Policy

Manav Rachna University has adopted a Green Policy to create a sustainable campus, focusing on environmental conservation, education, and eco-friendly practices. This policy integrates conservation efforts in decision-making, promotes sustainability awareness, supports research in areas like renewable energy and water conservation, and enforces practices such as a no-plastic policy and waste management. Energy and water conservation measures, including solar panels and rainwater harvesting, further reinforce these goals. Overseen by a Green Committee, MRU's policy aims to establish an eco-conscious campus through collaboration and consistent evaluation of environmental performance.



## 6. Prominent Research Publications

### Addressing SDG 13

#### **Patent Filed on System and method for monitoring air quality**

The faculty of Manav Rachna University collaborated with the sister concern group of researchers to file a patent on a system for monitoring air quality which is specifically designed to measure carbon dioxide (CO<sub>2</sub>) levels, dust density, and humidity. The system uses various sensors to collect air quality data, which is then displayed on a designated monitor for easy evaluation. Additionally, the system transmits this collected data to a remote location through a communication application, enabling external access and analysis.

(12) PATENT APPLICATION PUBLICATION  
(19) INDIA  
(22) Date of filing of Application :28/12/2022  
(21) Application No.202211076381 A  
(43) Publication Date : 06/01/2023  
(54) Title of the invention : SYSTEM AND METHOD FOR MONITORING AIR QUALITY

(51) International classification	:G01N0033000000, G01N0001220000, F24F0110700000, F24F0011300000, F24F0011000000	(71)Name of Applicant :	1)MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH & STUDIES (MRIIRS) FARIDABAD Address of Applicant :Manav Rachna Campus Rd, Gadakhor Basti Village, Sector 43, Faridabad, Haryana 121004, India Faridabad -----
(86) International Application No	:NA	Name of Applicant :	NA
Filing Date	:NA	Address of Applicant :	NA
(87) International Publication No	: NA	(72)Name of Inventor :	
(61) Patent of Addition Application Number	:NA	1)Dr. Yaman Hooda	Address of Applicant :Department of Civil Engineering, Faculty of Engineering & Technology, Manav Rachna International Institute of Research and Studies, Sector-43, Delhi-Surajkund Road, Faridabad, Haryana-121004, India Faridabad -----
Filing Date	:NA	2)Dr. Vishnu Raj	Address of Applicant :Department of Aeronautical Engineering & Technology, Manav Rachna International Institute of Research and Studies, Sector-43, Delhi-Surajkund Road, Faridabad, Haryana-121004, India Faridabad -----
(62) Divisional to Application Number	:NA	3)Dr. Ananna Bardhan	Address of Applicant :Department of Physics, Manav Rachna University, Sector – 43, Delhi–Surajkund Road, Faridabad – 121004, Haryana, India Faridabad -----
Filing Date	:NA	4)Dr. D. K. Sharma	Address of Applicant :Department of Physics, Manav Rachna University, Sector – 43, Delhi–Surajkund Road, Faridabad – 121004, Haryana, India Faridabad -----

(57) Abstract :  
A system (100) for monitoring air quality is disclosed. The system (100) comprises a carbon dioxide (CO2) sensor (102), a temperature sensor (104), a humidity sensor (106). The system (100) is adapted to evaluate the air quality and display data related to the evaluated air quality on a display (114). The system (100) is further adapted to transmit the data related to the evaluated air quality on a user device (110) through a computer application (112).  
No. of Pages : 17 No. of Claims : 10

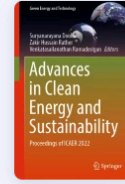
## Research Articles published by faculties in conferences/ journals relevant to SDG 13

Chauhan, S., Gaur, K., Ajit, Sharma, N. (2023). Performance Enhancement of Pyramid-Shaped Solar Still Using Phase Change Material with Porous Material. In: Doola, S., Rather, Z.H., Ramadesigan, V. (eds) Advances in Clean Energy and Sustainability. ICAER 2022. Green Energy and Technology. Springer, Singapore.

Home > [Advances in Clean Energy and Sustainability](#) > Conference paper

## Performance Enhancement of Pyramid-Shaped Solar Still Using Phase Change Material with Porous Material

Conference paper | First Online: 22 May 2023  
pp 375–384 | [Cite this conference paper](#)



**Advances in Clean Energy and Sustainability**  
(ICAER 2022)

[Sahil Chauhan](#) ✉, [Kunal Gaur](#), [Ajit](#) & [Naveen Sharma](#)

[Access this chapter](#)

Katiyar, A and Gupta, N.K. (2023) Effect of different aluminium oxide based nanofluid concentrations on the efficiency of solar water desalination system, *Journal of Thermal Engineering*, 9(1)61-68.

*J Ther Eng, Vol. 9, No. 1, pp. 61–68, January 2023*





**Journal of Thermal Engineering**  
Web page info: <https://jten.yildiz.edu.tr>  
DOI: 10.18186/thermal.1242844



### Research Article

## Effect of different aluminium oxide based nanofluid concentrations on the efficiency of solar water desalination system

Ajit KATIYAR<sup>1</sup> , Naveen Kumar GUPTA<sup>2</sup> 

<sup>1</sup>Department of Mechanical Engineering, Manav Rachna University, Faridabad, 121003, India

<sup>2</sup>Department of Mechanical Engineering, Institute of Engineering and Technology GLA University, Mathura, 281406, India

Sharma, N., Noushad, S., Siva Ram Kumar Reddy, G., Ajit (2023). Productivity Improvement of Solar Still Using Cemented Blocks. In: Doola, S., Rather, Z.H., Ramadesigan, V. (eds) *Advances in Clean*



Energy and Sustainability. ICAER 2022. Green Energy and Technology. Springer, Singapore.

Home > [Advances in Clean Energy and Sustainability](#) > Conference paper

## Productivity Improvement of Solar Still Using Cemented Blocks

Conference paper | First Online: 22 May 2023  
pp 421–429 | [Cite this conference paper](#)



**Advances in Clean Energy and Sustainability**  
(ICAER 2022)

Naveen Sharma , Shaik Noushad, G. Siva Ram Kumar Reddy & Ajit

[Access this chapter](#)

Ajit, Pandey, H., Gupta, N.K. (2023) Analysis of solar water desalination of hybrid nanofluids: an experimental study, Journal of Thermal Engineering, 9(6)1502-1515.



**Journal of Thermal Engineering**  
Web page info: <https://jten.yildiz.edu.tr>  
DOI: 10.18186/thermal.1400984



### Research Article

## Analysis of solar water desalination using hybrid nanofluids: An experimental study

Ajit<sup>1,2</sup> , Harshit PANDEY<sup>3</sup> , Naveen Kumar GUPTA<sup>1,\*</sup> 

<sup>1</sup>Department of Mechanical Engineering, GLA University, Mathura, 281406, India

<sup>2</sup>Department of Mechanical Engineering, Manav Rachna University, Faridabad, 121004, India

<sup>3</sup>Department of Mechanical Engineering, Bundelkhand Institute of Engineering & Technology, Jhansi, 284128, India

#### ARTICLE INFO

##### Article history

Received: 17 April 2022

Accepted: 28 May 2022

#### ABSTRACT

The performance characteristics of a novel solar water desalination system has been investigated experimentally. The desalination unit consisted of a square basin-pyramid solar still



## 7. REGULAR SKILL SET ENHANCEMENT AT MRU-CERTIFICATIONS EARNED BY STUDENTS AND FACULTY MEMBERS

Skill development and enhancement are essential aspects of institutional growth. The university is dedicated to organizing programs for faculty and students, through its qualified constituent bodies, to continuously enhance skills in line with the latest technologies.

Additionally, faculty members and students are encouraged to participate in seminars, conferences, workshops, training programs, and short-term courses both within and outside the university. Sample certifications obtained by faculty and students in areas relevant to SDG 13 are listed below.



**Elite**  
**NPTEL Online Certification**  
(Funded by the MoE, Govt. of India)

This certificate is awarded to  
**SAKSHI SHARMA**  
 for successfully completing the course

**Electronic Waste Management - Issues and Challenges**

with a consolidated score of **82** %

Online Assignments	23.33/25	Proctored Exam	58.5/75
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Total number of candidates certified in this course: 1168

Jan-Feb 2023  
 (4 week course)

Indian Institute of Technology Kharagpur

Prof. Debjani Chakraborty  
 Coordinator, NPTEL  
 IIT Kharagpur

Roll No: NPTEL23CE25S44530251      To validate the certificate      No. of credits recommended: 1 or 2



# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to  
**BALDEEP SINGH**  
 for successfully completing the course

## Electronic Waste Management - Issues and Challenges

with a consolidated score of **58** %

Online Assignments	12.58/25	Proctored Exam	45.49/75
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Total number of candidates certified in this course: **1168**

Jan-Feb 2023  
 (4 week course)

**Prof. Debjani Chakraborty**  
 Coordinator, NPTEL  
 IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23CE25S44420688

To validate the certificate



No. of credits recommended: 1 or 2



**Elite**

# NPTEL Online Certification

(Funded by the MoE, Govt. of India)



This certificate is awarded to  
**KASHNI BANSAL**  
 for successfully completing the course

## Electronic Waste Management - Issues and Challenges

with a consolidated score of **63** %

Online Assignments	13.58/25	Proctored Exam	49.25/75
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Total number of candidates certified in this course: **1168**

Jan-Feb 2023  
 (4 week course)

**Prof. Debjani Chakraborty**  
 Coordinator, NPTEL  
 IIT Kharagpur



Indian Institute of Technology Kharagpur



Roll No: NPTEL23CE25S34420020

To validate the certificate



No. of credits recommended: 1 or 2