



RCMAS
RAJAGIRI COLLEGE OF MANAGEMENT &
APPLIED SCIENCES

Criterion VII Institutional Values and Best Practices

RAJAGIRI COLLEGE OF MANAGEMENT AND APPLIED SCIENCES

RAJAGIRI VALLEY P.O, KAKKANAD, KERALA 682039

An ISO 9001 : 2015 Certified Institution

Affiliated to Mahatma Gandhi University, Kottayam and Approved by AICTE

7.1

Institutional Values and Social Responsibilities

**7.1.2 Report on Alternate Source of Energy and Energy
Conservation**

2019-2024

Submitted to



7.1.2 Report on Alternate Sources of Energy and Energy Conservation

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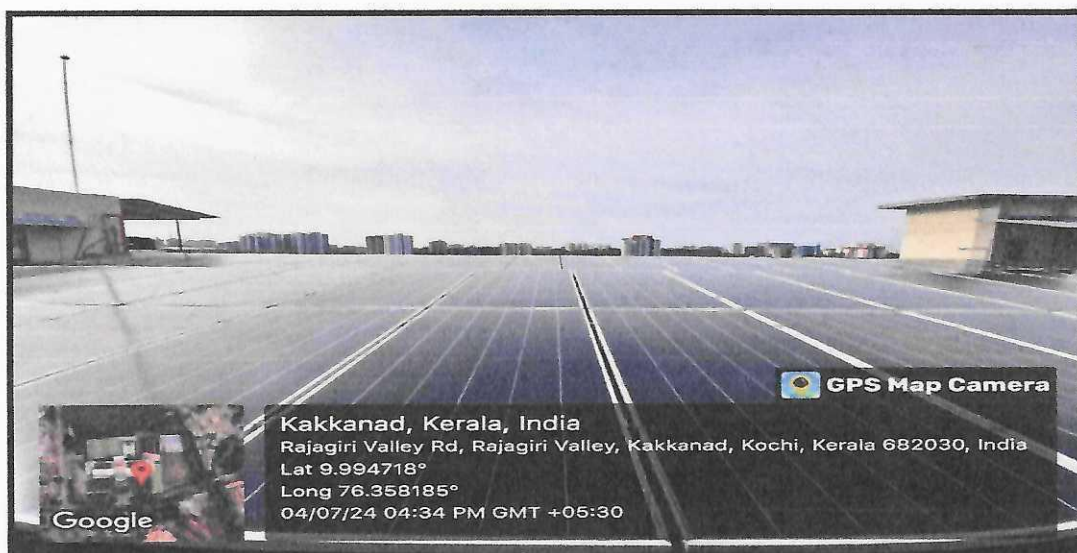
Report on Alternate Sources of Energy and Energy Conservation

1. Solar Energy

In pursuit of sustainable energy solutions, RCMAS proudly inaugurated its solar panel installation atop the college auditorium in 2021. This strategic move was driven by a core objective: energy conservation and environmental responsibility.

The solar panel system, comprising state-of-the-art photovoltaic cells, harnesses the abundant solar resource to generate clean and renewable electricity. With an average annual production capacity of 182 kWp, the system significantly reduces our reliance on conventional power sources. This not only translates to substantial cost savings but also bolsters our commitment to reducing our carbon footprint.

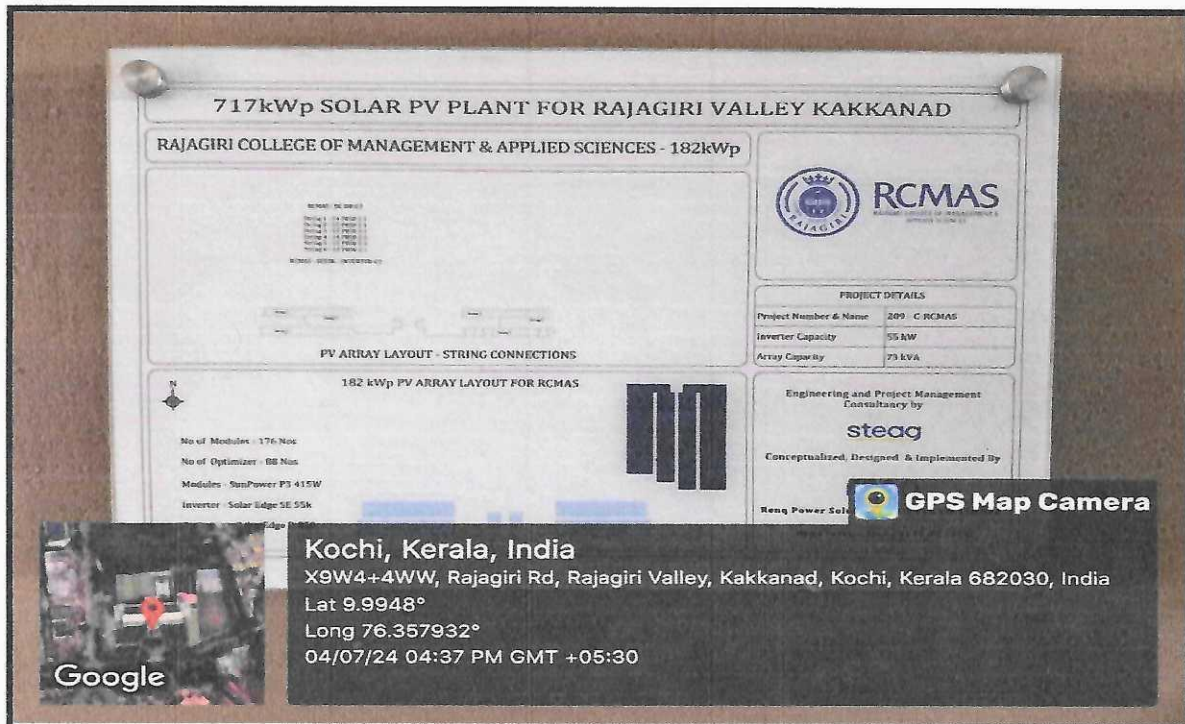
As an educational institution, we understand the imperative to lead by example. The installation of solar panels exemplifies our dedication to sustainability, aligning with global efforts to combat climate change. By utilizing solar energy, we effectively reduce greenhouse gas emissions, minimize air pollution, and contribute to a healthier environment for our campus community and the wider society.



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The campus efficiently operates on a combination of electricity and thermal energy. The electricity supply comes from four main sources: the Kerala State Electricity Board (KSEBL), a Solar Photovoltaic (SPV) system and Diesel Generators (DGs). The DGs are specifically utilized during grid outages to ensure an uninterrupted power supply. It's worth noting that the SPV system is grid-tied, which means that when the grid goes down, the SPV system stops generating electricity. The annual electricity consumption of the college is 42116 kWh.

The 182 kWp SPV system often produces more electricity than the campus currently needs. This excess power is fed back into the KSEB grid, which helps to offset the institution's future electricity bills. As a result, the total electricity consumption is a combination of the billed electricity, the difference between the total solar generation and the amount of solar energy exported, and the electricity generated by the DG sets.



717kWp SOLAR PV PLANT FOR RAJAGIRI VALLEY KAKKANAD

RAJAGIRI COLLEGE OF MANAGEMENT & APPLIED SCIENCES - 182kWp

PROJECT DETAILS

Project Number & Name	209 - C - RCMAS
Inverter Capacity	55 kW
Array Capacity	73 kVA

Engineering and Project Management Consultancy by **steag**

Conceptualized, Designed & Implemented By **Renq Power Sol**

182 kWp PV ARRAY LAYOUT FOR RCMAS

No of Modules - 176 Nos
No of Optimizer - 88 Nos
Modules - SunPower P3 415W
Inverter - Solar Edge SE 55k

Kochi, Kerala, India
X9W4+4WW, Rajagiri Rd, Rajagiri Valley, Kakkanad, Kochi, Kerala 682030, India
Lat 9.9948°
Long 76.357932°
04/07/24 04:37 PM GMT +05:30

GPS Map Camera

Details of the Solar Power Plant

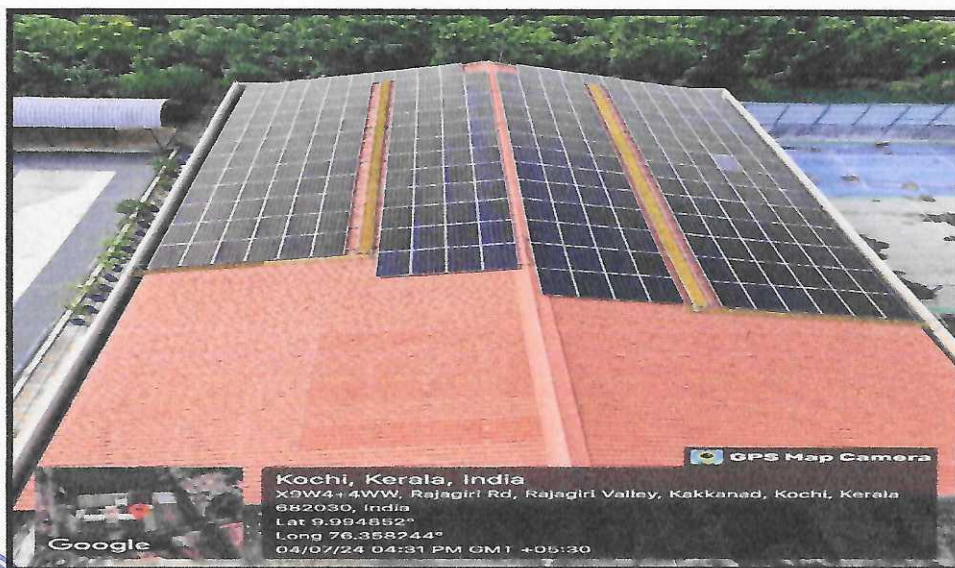


Handwritten signature in green ink.

The financial implications of the energy transformation are also equally noteworthy. By generating surplus energy through solar panels, the college not only offsets its own electricity consumption but also contributes excess power to the grid, resulting in a "minus bill" scenario as the institution does not use more electricity than what is fed into the grid. This financial sustainability frees up resources for other academic and sustainability initiatives and underscores the economic viability of renewable energy adoption.

The Energy Performance Index (EPI) is a crucial metric for evaluating the energy efficiency of a campus which provides valuable insights into how effectively and efficiently energy is used within the campus facilities. In simpler terms, a lower EPI indicates a more sustainable and energy-conscious operation, while a higher EPI suggests room for improvement in energy utilization. EPI of the institution is 10.62kWh/m².

Additionally, the solar panel serves as an educational tool, allowing students and faculty to learn about renewable energy and the significance of sustainable practices. It advances research opportunities, inspiring innovation and ecological consciousness among our stakeholders.



Solar Panels at top of the College Auditorium



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2. Solar Lights

With a constellation of solar lights, Rajagiri College has lit up its campus, illuminating its grounds with a beautiful glow of environmental concern. These lights, which derive their power from solar radiation and are powered by clean, renewable energy, represent the college's dedication to cutting carbon emissions and minimizing its environmental impact in addition to providing light. What sets the solar lighting initiative apart is its comprehensive integration within the campus infrastructure. Each light fixture is strategically positioned to maximize solar exposure, ensuring optimal energy capture throughout the day.

Solar Lights on the Campus



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3. Sensor Lights and LED Appliances

The College has embraced the revolutionary potential of LED appliances and sensor lighting, paving the way for efficiency and conservation of energy. At the heart of this luminous revolution lies the integration of sensor lights, imbued with a keen sense of awareness that cuts across the function of illumination. These lights, equipped with motion sensors, possess a remarkable ability to discern activity and adjust their brightness accordingly.

Complementing these sensor lights are the radiant emissaries of LED technology, illuminating the college's interior spaces with a brilliance that defies convention. LED appliances used in classrooms and computer labs, with their energy-efficient design and longevity, serve as icons of sustainability, casting aside the shadows of inefficiency and waste. From classrooms to laboratories, conference hall, board room



Legend

and administrative offices, the campus pulsates with the vibrant hues of LED lighting, signaling a commitment to a brighter, greener future.

Sensor lights in the washroom



LED Lights in the Conference Hall

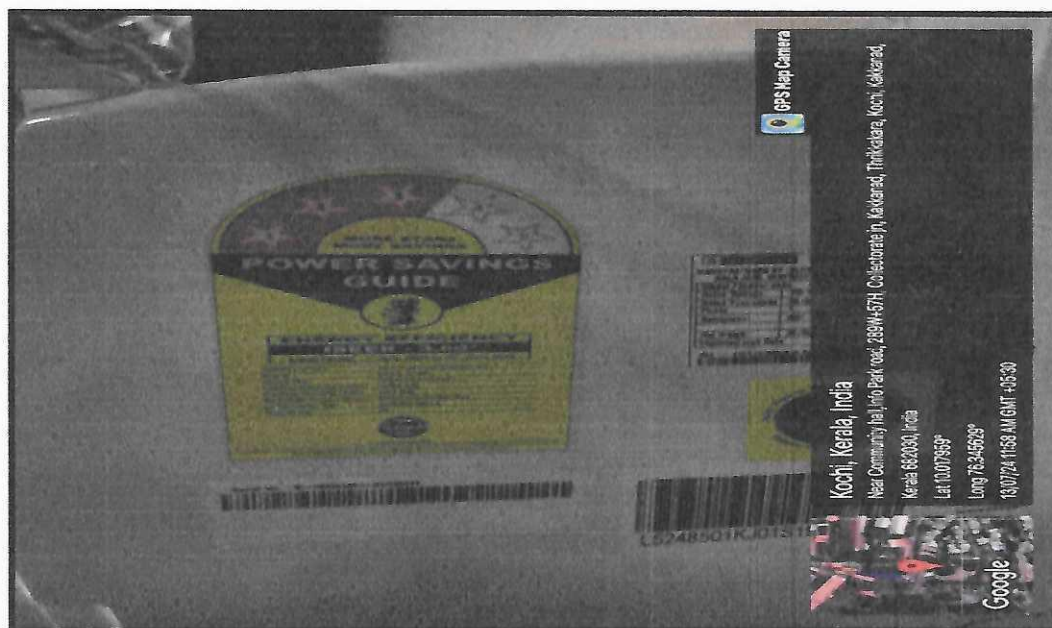


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4. Energy Saving Electrical Equipments

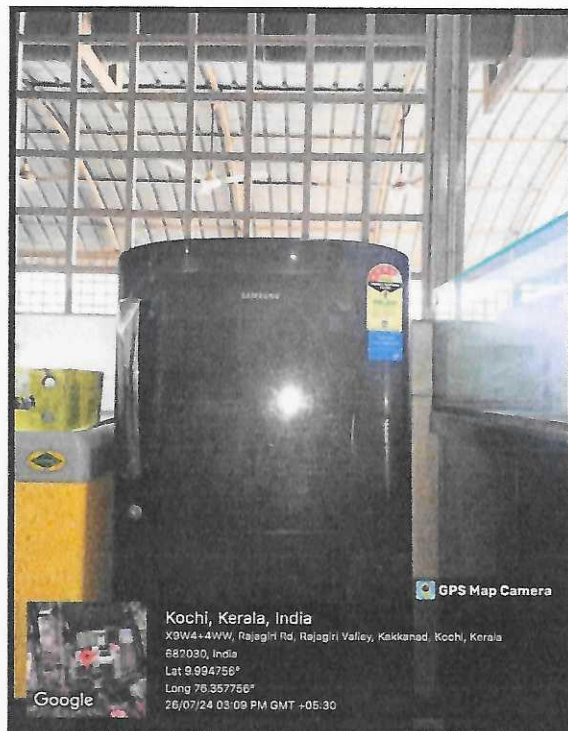
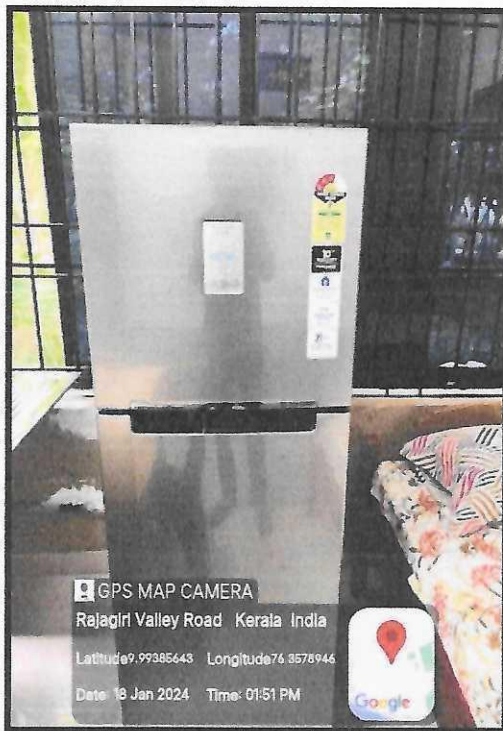
The College has prioritized the use of energy-efficient appliances throughout the campus. The electrical appliances like air conditioners and refrigerators are **three-star** and **four-star** rated and they significantly reduce energy consumption compared to their less efficient counterparts, leading to lower environmental impact and long-term cost savings. In tandem with the objective, energy-saving laboratory equipment is also actively sought after and implemented. This ensures that essential educational activities are conducted with minimal environmental footprint. By prioritizing energy efficiency in both administrative and academic areas the College sets a commendable example for sustainable practices within the educational sector.

3 star-rated AC



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3 star and 4 star rated refrigerators



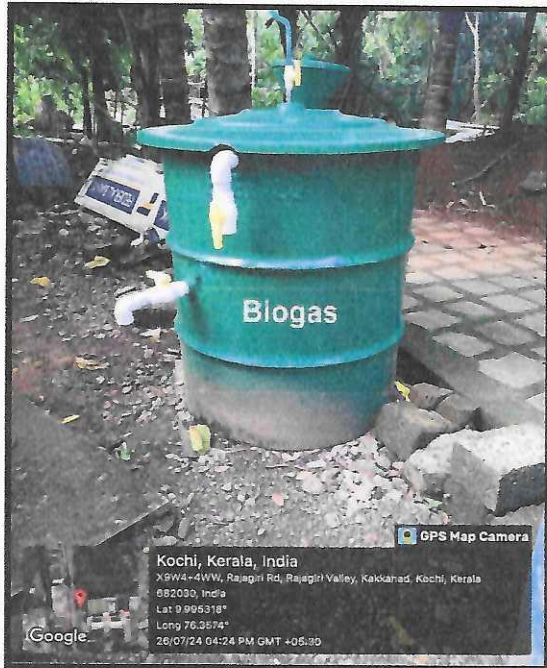
5. Biogas Plant

The College aims to create a greener campus environment and biogas production plays its role in this mission. Biogas offers a double win: it generates a clean and sustainable energy source while effectively managing organic waste. Recognizing this significant benefit, the college has established a biogas plant with a capacity of 3500 kcal/m³. This translates to an impressive daily production of 2625 kcal, with 123 kg generated per year.

The biogas plant utilizes a clever approach – it harnesses degradable waste generated by the college canteen as its primary feedstock. This organic waste is then transformed into biogas, which can partially replace Liquefied Petroleum Gas (LPG) used for cooking needs in the canteen itself. Such a closed-loop system promotes resource efficiency. The institution thus not only reduces its reliance on fossil fuels

but also minimizes its environmental footprint by responsibly managing organic waste.

Biogas Plant



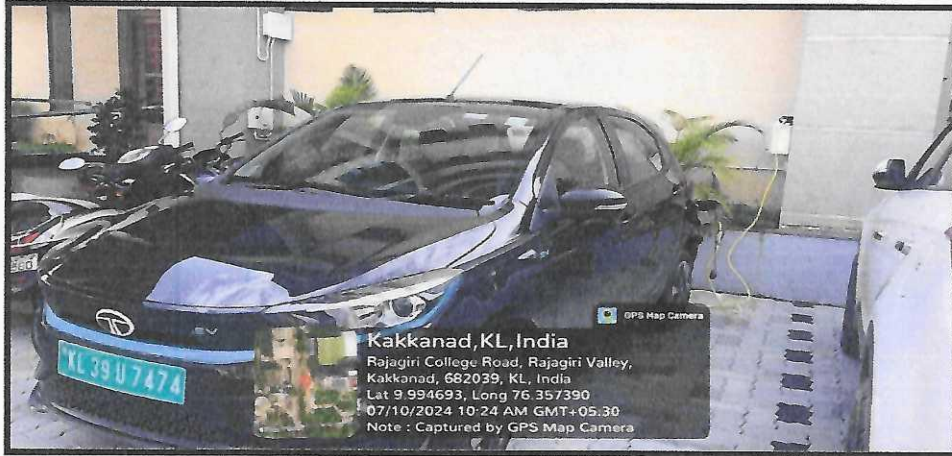
6. Eco-friendly Vehicles and Charging points

Rajagiri College actively promotes the use of electric vehicles (EVs) on campus. This initiative directly targets a key contributor to climate change: transportation emissions. By providing designated charging stations and fostering a culture that embraces EVs as a viable mode of transportation, the college actively works towards a more sustainable campus environment. The institution also promotes using bicycles as a commendable sustainable practice. Riding cycles reduces the carbon footprint, helping to keep the air clean and the environment healthier. It also cuts down on traffic congestion, making the campus safer and more pleasant to navigate. Cycling promotes physical fitness and well-being, encouraging students and staff to lead more active lifestyles. Additionally, it's cost-effective, saving money on fuel and vehicle upkeep. The increase in the number of students using bicycles for daily commutes proves how well the message of green practices have inspired the



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student community about the importance of sustainability and resource conservation.



Electric Vehicle and Charging Point

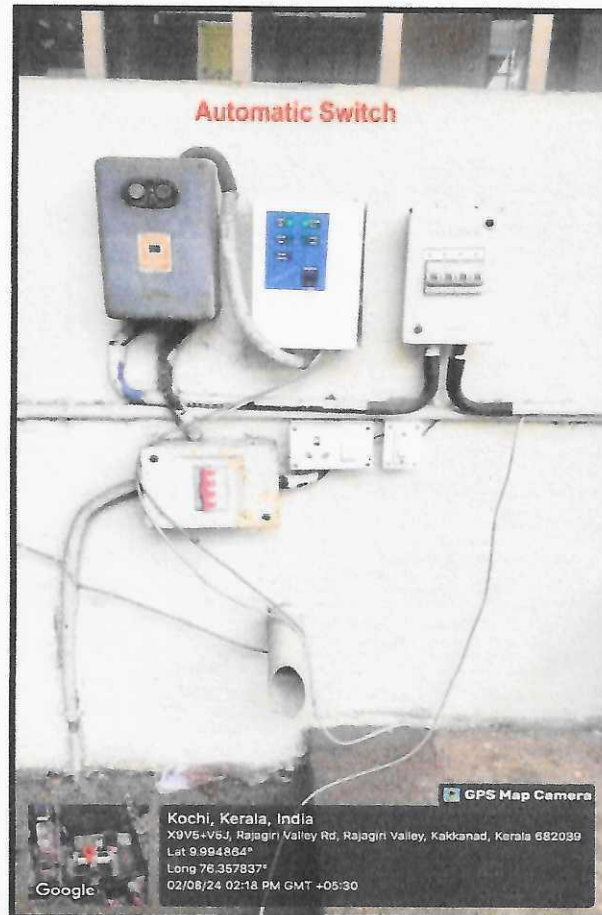
7. Automatic Switch for Water Pumps

To address the issue of water wastage due to overflow, the College has implemented an automatic switch system for its water pumps. These switches ensure that the pump is activated when the water level drops below a predetermined point and automatically shuts off when the tank is full, preventing overflow. The implementation drastically reduces water wastage and contributes to overall



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environmental sustainability. The optimized operation of water pumps leads to reduced energy consumption. Another significant advantage is substantial cost reduction.

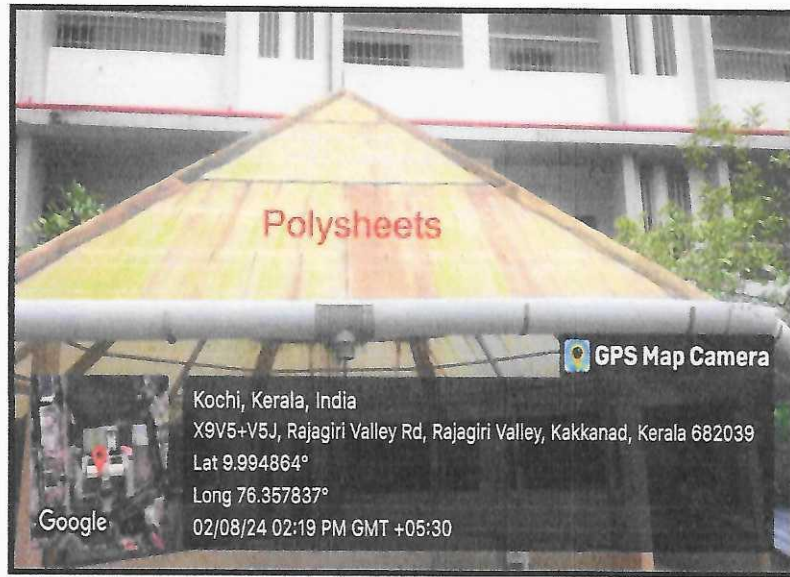


8. Polycarbonate Sheets

These sheets, which are placed over the multi-purpose open classroom also known as Ettuvattom, offer excellent thermal insulation, reducing heat transfer between indoor and outdoor environments. Polycarbonate sheets reduce the need for artificial lighting during daylight hours, leading to significant energy savings. The exceptional durability of polycarbonate sheets reduces the need for frequent replacements as well.



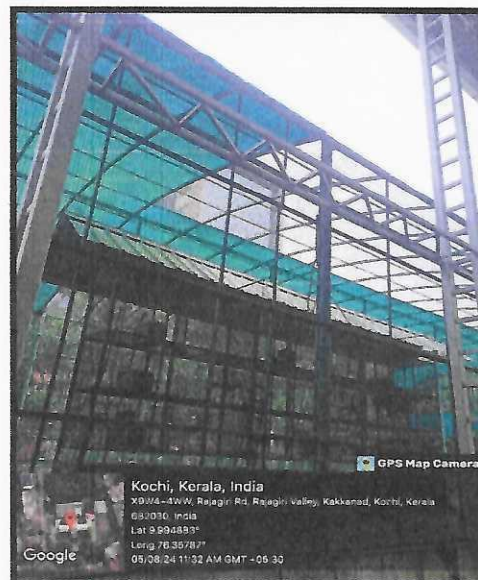
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9. Green Shade

Green Shades shield people, animals and plants from harmful UV rays. Unlike natural plants, artificial green shades require minimal care, saving time and resources. They are resistant to weather conditions and pests, ensuring long-lasting performance.

Green shade over the Aviary



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10. Multi-purpose Open Class/Ettuvattom

Ettuvattom, serves as a cultural arena where a lot of extra curricular events are launched and celebrated. It is an octagonal structure, as the name suggests, which is open from all sides. Located in a silent and comfortable area of the campus, adjacent to the building, the structure is the perfect place for students to hangout with friends, engage in discussions and practice for cultural events. It is also often used as an open classroom, for teaching and learning, creating a serene, naturally bright and properly ventilated setting without relying on electricity.



RCMAS, aligned with its vision of holistic development and mission of social responsibility, has implemented various time-tested energy-saving measures. These initiatives have contributed immensely to the goals of environmental sustainability optimisation of resources, utilization with propriety and financial efficiency. Adopting eco-friendly practices, the college moves fast forward to building a greener and more sustainable future.



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