

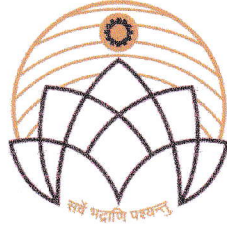
**SHRI MADHWA VADIRAJA INSTITUTE OF  
TECHNOLOGY AND MANAGEMENT**

(A unit of Shri Sode Vadiraja Mutt Education Trust ®)

**VISHWOTHAMA NAGARA, BANTAKAL, UDUPI**

Affiliated to VTU, Belagavi, Approved by AICTE, New Delhi

Accredited by NBA (BE –CSE, ECE) and NAAC with A Grade



**SMVITM**

**Report Energy Conservation Measures**

2022-23

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*Principals*

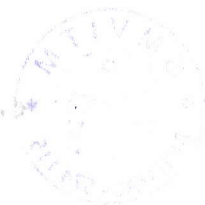
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## 1. INTRODUCTION:

Energy conservation is essential for mitigating climate change by reducing greenhouse gas emissions associated with energy production and consumption. Energy conservation is a vital component of institutional sustainability efforts, offering financial, environmental, and social benefits. By implementing energy conservation measures and fostering a culture of sustainability, institutions can reduce their carbon footprint, save money, and inspire positive change within their communities.

It helps enhance energy security by reducing dependence on imported fuels and minimizing the risk of supply disruptions. Improving energy efficiency is a fundamental principle of energy conservation. It involves achieving the same level of output or service with less energy input through technological advancements, process optimization, and behavioral changes.

Conducting energy audits to assess energy use patterns, identify inefficiencies, and prioritize conservation measures. Energy audits provide valuable insights into potential energy-saving opportunities and inform decision-making. Upgrading lighting systems to energy-efficient LED fixtures, installing occupancy sensors, day lighting controls, and task lighting to reduce electricity consumption and improve lighting quality.

Engaging occupants through energy awareness campaigns, educational initiatives, and participation in energy-saving programs to encourage energy-efficient behaviors and practices. The renewable energy source used in the campus include solar power plant. Usage of LED bulbs, BLDC fans are used in the campus. Green audit and energy audit for monitoring the system for continuous improvement

Energy conservation reduces carbon emissions, air pollution, and other environmental impacts associated with energy production and consumption, contributing to environmental sustainability.



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## 2. OBJECTIVES OF ENERGY CONSERVATION MEASURES:

The objectives of energy conservation in institutions are multifaceted and aim to achieve various goals related to financial savings, environmental sustainability, operational efficiency, and social responsibility. Here are the primary objectives of energy conservation

1. To improve operational efficiency by optimizing energy use and reducing waste.
2. To minimize the carbon footprint and environmental impact, helping to combat climate change and preserve natural resources for future generations
3. To enhance the performance and reliability of their facilities, minimize downtime, and improve overall operational effectiveness.
4. To provide valuable educational opportunities for students, researchers, and the broader community

## 4. INITIATIVES IMPLEMENTED AS PER GREEN CAMPUS POLICY

Developing and implementing an effective methodology for energy conservation in institutions involves a systematic approach that encompasses assessment, planning, implementation, monitoring, and continuous improvement. The structured methodology for energy conservation in SMVITM campus include:

- Solar Power Plant
- Energy Audit
- LED Bulbs and BLDC fans
- Solar Water Heaters
- EV Vehicles

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## SOLAR POWER PLANT:

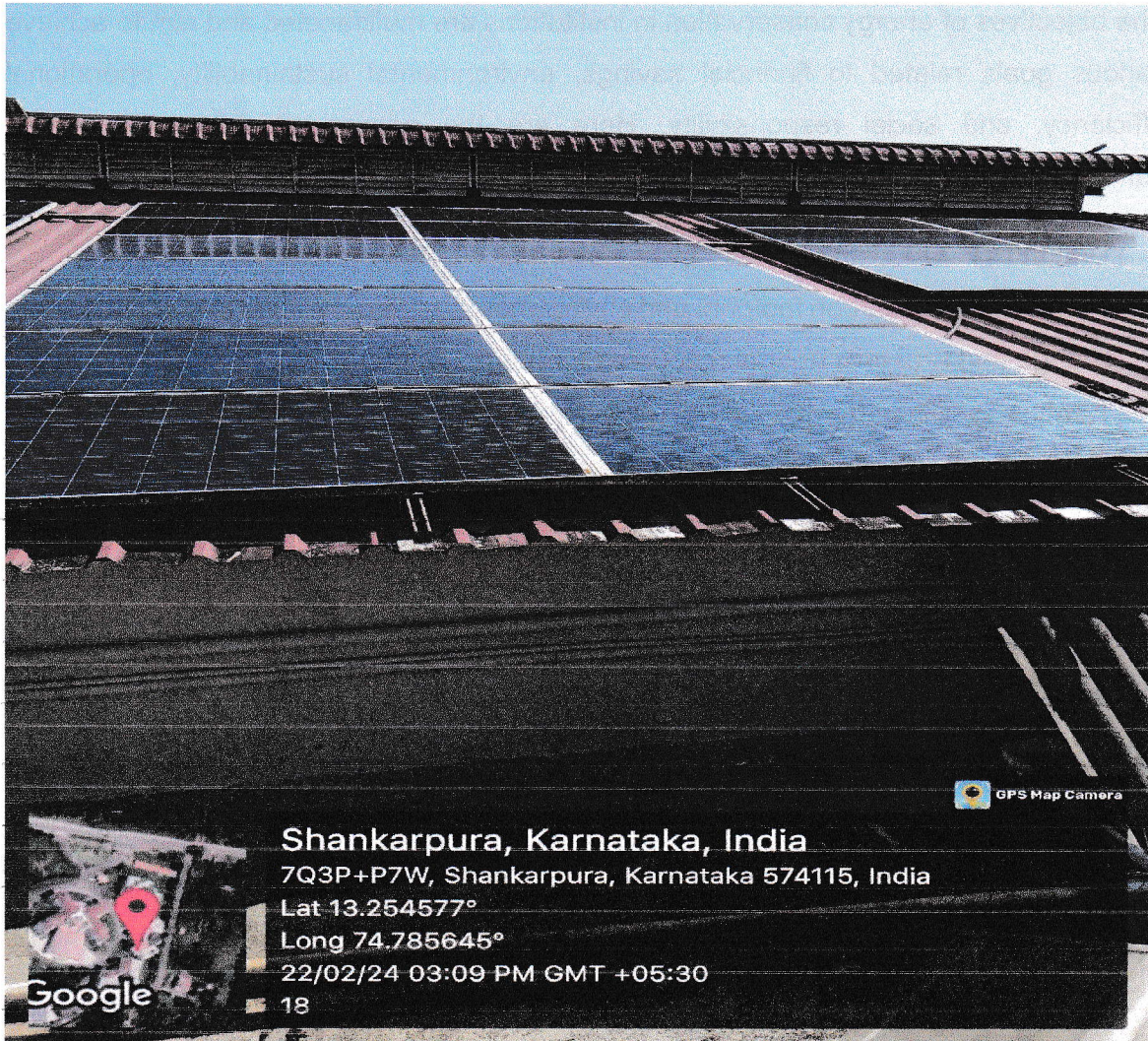


Figure 1: Solar Power Plant

A 125-KW rooftop solar power plant is installed in the campus as an alternate renewable source of energy. The Orb energy limited installed the solar power plant in 2018-19 in SMVITM campus. This initiative has reduced the use of non-renewable energy source extensively. The energy generated is used by the college and also exported to Mescom.

The solar power plant would feature the installation of photovoltaic (PV) solar panels on rooftops, on workshop within the SMVITM campus. Considering the sunlight exposure, shading, structural integrity, and aesthetic impact appropriate locations was selected for

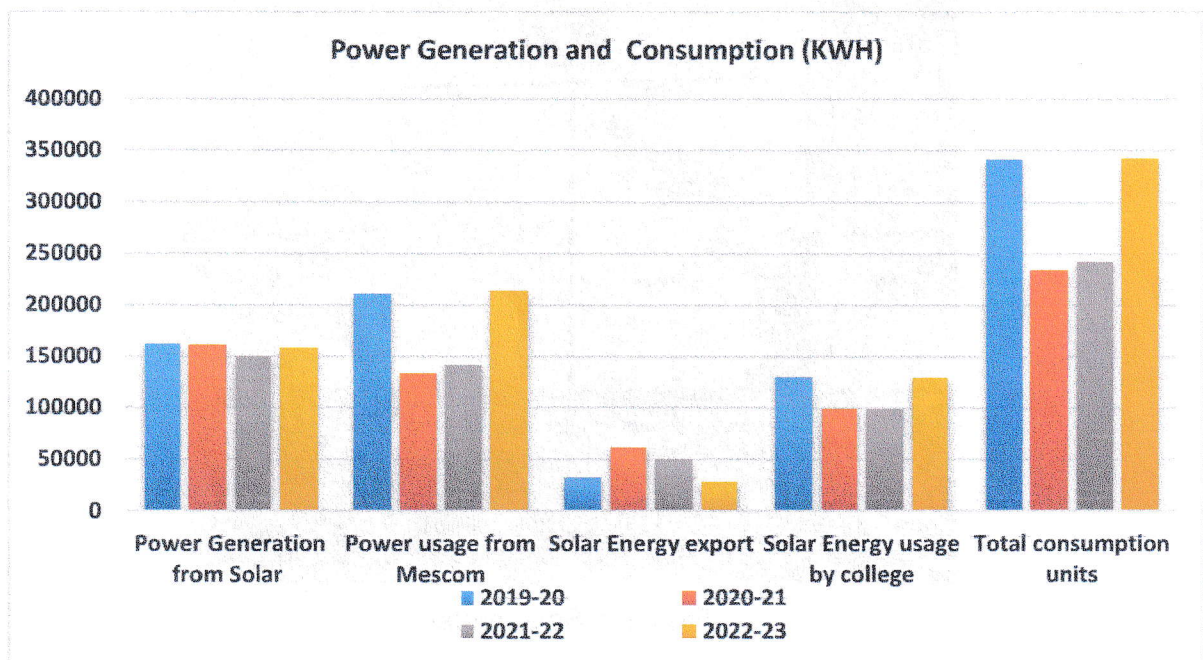
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solar panel installation. Advanced monitoring and control systems would be implemented to track solar energy production, system performance, and energy consumption in real-time.

The system enable efficient operation, proactive maintenance, and optimization of solar power plant performance to maximize energy yield and return on investment. The solar power plant is seamlessly integrated with existing campus infrastructure, including electrical systems, buildings, and campus operations. The graph indicates the energy generation and its utilization in the campus and also export to Mescom for last four years:



Graph 1: Power consumption and solar energy generation

The graph shows the energy generation by solar power plant in the range of 1,50,000 to 2,00,000 KWH which is half of the energy requirement by the campus.

Solar water heaters are used in the hostel for hot water facility. Sola metes measures the energy generated internal consumption and export to Mescom. The electricity bill is enclosed.

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Figure 2: Solar meter

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### **Energy Audit:**

Conducting an energy audit for a campus involves assessing the energy consumption patterns, efficiency, and performance of buildings, facilities, and systems across the entire campus environment.

The energy and green audit in SMVITM campus has been conducted by Bigeta LLP Pvt. Ltd. The findings of energy and green audit play a crucial role in incorporating the improvised methods to reduce the energy utilization

Based on the outcomes of energy audit the action taken are as follows

**LED Bulbs:** The CFL bulbs are replaced by LED bulbs. In hostel all the bulbs are replaced by LED light. In the college the replacement is done on a phased manner. They consume significantly less electricity, leading to lower energy bills and reduced carbon emissions.

**BLDC fans:** The College has procured 150 BLDC fans. The fans of hostel has been replaced by BLDC fans. In the college the replacement is done on a phased manner. BLDC fans are very efficient reduces operating costs, and supports sustainability goals. Their advanced features, quiet operation, and long-term reliability make them an excellent choice.

**Identification of flora and fauna:** The campus is lush green and vey vast which has enough flora and fauna of different species. Measures were taken to identify the different species of birds and also different species of tress. More than 60 species of bids identified and more than 150 different species of trees identified.

### **AC Procurement:**

Institute decided to purchase Air conditioning system with minimum 4 star as it will be energy efficient. These units are designed to consume less electricity while providing effective cooling, resulting in lower energy bills over time.

**Energy literacy certification:** Students and faculties were encouraged to complete the course on virtual mode conducted by Energy Swaraj foundation on energy conservation. More than 750 SMVITM members participated and benefited by the program. The course highlights the energy conservation methods and practices. The



institute got Silver certification for making 500+ members energy literates. The institute received the energy clock by Energy Swaraj Foundation to the college which will indicate time required to increase 1.5<sup>0</sup>C temperature in the campus.

**Conclusion:**

- The energy efficiency systems implemented in the campus has significantly improved operational efficiency by optimizing energy use and reducing waste.
- It has minimized the carbon footprint and environmental impact, helping to combat climate change and preserve natural resources for future generations
- The performance and reliability of the facilities, minimize downtime, and improved overall operational effectiveness.
- It provided valuable educational opportunities for students, researchers, and the broader community





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