

Industrial Visit Report

On

MAHAGENCO Solar Power Plant, Shirsuphal, Tal- Baramati, Dist- Pune

Date:- 25 September 2024



TE Electrical Student & Teacher with shirsuphal Solar Power Plant, staff

Industrial Visit Report: MAHAGENCO Solar Power Plant, Shirsuphal, Tal- Baramati, Dist- Pune

Date of Visit:-25 September 2024.

Organized By: Department of Electrical Engineering, VPKBIET,Baramati.

Location:- Mahagenco Solar Power Plant, Baramati,Dist.Pune.

Co-ordinator:-Ms. S. D. Rokade, Mr. S. K. Raskar.

Instructor(MAHAGENCO): Mr. Vijay Kulkarni, Add. Executive Engineer

1.Introduction :-

As part of the curriculum for the Electrical Infrastructure Design and Construction of power plant, Power Electronics (PE), Pune, an industrial visit was organized to the Shirsuplal Solar Power Plant, Baramati,Dist.Pune.on 25 September 2024. The visit aimed to provide students with practical exposure to the workings of a solar power plant and its components. This hands-on experience was essential for reinforcing theoretical concepts covered in the classroom.

A 50 MW solar power plant has Been added to the Maharashtra's grid by Mahaganco. Mahaganco is the state-Run power generation company which commissioned the plant on 13 July, 2014.The plant of Shirsuplal, Baramati at Pune is the first solar plant which has Been set up via public-private partnership. The plant was completed in only 4.5 months, which is a record in itself. The project is of two phases and in the First phase the plant will generate 83 million units of power every year.

2.Objectives of the Visit:

The primary objectives of the visit were:

- To understand the working principles of a Solar power plant
- To observe the major electrical components of solar power plant
- To learn about the maintenance procedures for key components of the plant To observe and discuss the testing methods used for performance assessment
- To explore and understand practical, economically viable, scalable and sustainable energy access models. The participants will have a first-hand experience of the technology, business model, end application, operations and maintenance and on the ground issues of energy access models.

3. Key Components Discussed:

During the visit, students were introduced to the major components of the hydroelectric power plant, and their roles in power generation were explained in detail. The critical components discussed were:

a) Importance of Photovoltaic Panels in Energy Capture:

Solar panels lead in the renewable energy space. They turn sunlight directly into electric power. Most solar panels use silicon cells, known for being strong and efficient.

b) The Role of Inverters in Power Conversion:

Inverters change DC from solar panels to AC for our use. They're vital, especially for rooftop solar setups. In 2022, nearly half of new solar power was installed on rooftops.

c) Deep Cycle Batteries: The Backbone of Energy Storage:

Deep cycle batteries store energy for night use. They handle many charge and discharge cycles. This makes them key for a reliable power grid and smooths out solar power's supply

d) Charge Controller:

A charge controller is used to control the charging and discharging of the battery. The charge controller is used to avoid the overcharging of the battery. The overcharging of a battery may lead to corrosion and reduce plate growth. And in the worst condition, it may damage the electrolyte of the battery.

e) System balancing component:

It is a set of components used to control, protect and distribute power in the system. These devices ensure that the system working in proper condition and utilize energy in the proper direction. And it ensures maximum output and security of other components of a solar power plant.

5. Learning Outcomes:

All students visited to each section of power plant like Solar panel, Invertor Unit, transformer unit and SCADA and grid connection. Now they are able to Understand the concept of Solar energy, working of photovoltaic cell, working Of Solar panel, conversion of DC to AC by using Invertor unit, step up of Voltage by transformer unit and distribution of energy by grid connection. They are able to estimate the land, size and cost required for set up of solar Power plant for domestic or commercial use. They are aware with the central State benefits available for set up of solar power plant.

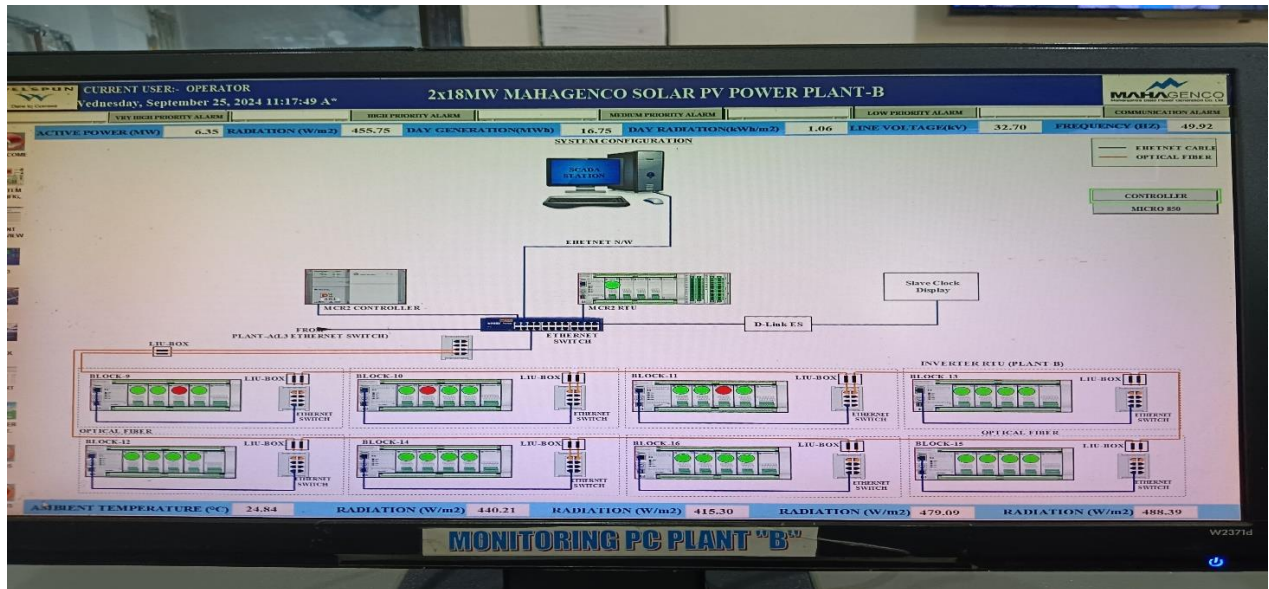
Students had the opportunity to interact with engineers and technicians, which helped them appreciate the importance of teamwork and effective communication in large- scale engineering operations.

6. Conclusion:

The industrial visit to Shirsuphal solar Power Station was an invaluable experience for the students of the PE course. It provided them with a real-world understanding of how solar power plants operate, the intricacies of maintaining critical components, and the practical challenges faced in the day-to-day operations of such facilities.

This visit not only enhanced the technical knowledge of the students but also inspired them to explore careers in renewable energy, plant maintenance, and power systems. The hands-on learning experience will undoubtedly complement their academic learning and help them in their future professional endeavours.

Some Glimpses:-



Site Visit Photo



Felicitation of Shirsuphal, Solar Electric Power Station staff

Mr. S. K Raskar
Asst. Professor,
Dept. of Electrical Engineering,
VPKBIET, Baramati