



School of Engineering & Technology

Department of Mechanical Engineering

Industrial Visit Report

Visit to Vaitarna Hydroelectric Power Plant, Igatpuri, Nashik

Date: 13th October 2025

Organized by: Department of Mechanical and Aerospace Engineering

Institution: SOET, Sandip University, Nashik

1. Introduction

An industrial visit to the Vaitarna Hydroelectric Power Plant, Igatpuri, Nashik, was organized on 13th October 2025 by the Departments of Mechanical and Aerospace Engineering, Sandip University. The visit was part of the department's initiative to bridge the gap between theoretical learning and practical industrial exposure.

The primary objective of the visit was to provide students with a deeper understanding of hydroelectric power generation systems, their operation, and the technologies involved in renewable energy production. Students were expected to relate their classroom learning in thermodynamics, fluid mechanics, and energy systems with real-world applications observed at the plant.

2. Objectives of the Visit

The main goals of organizing this visit were:

- To understand the working principles of hydroelectric power generation.
- To study the structure, components, and operation of turbines, generators, and control systems.
- To observe the power distribution and management process at a hydroelectric plant.
- To encourage awareness about sustainable and renewable energy resources.
- To enhance students' industrial exposure and technical competencies through practical observation.

3. Overview of Vaitarna Hydroelectric Power Plant

The Vaitarna Hydroelectric Power Plant, located in the scenic hilly region of Igatpuri in Nashik district, utilizes the Vaitarna River as a major water source for electricity generation. The plant is operated and maintained under the jurisdiction of the Maharashtra State Electricity Board (MSEB).

The power plant operates on the principle of converting the potential energy of stored water into mechanical energy using turbines, which is then transformed into electrical energy through generators. Engineers at the plant explained the complete process, including dam water storage, penstock flow control, turbine operation, and electrical output regulation. Students also learned

about the control room functions, safety mechanisms, and maintenance activities essential for uninterrupted power generation.



4. Visit Highlights and Learning Outcomes

During the visit, students had the opportunity to:

- Observe the hydraulic turbine system, including the Francis and Kaplan type turbines.
- Understand generator synchronization and the process of transmitting power to the main grid.
- Learn about load balancing, water level monitoring, and automation systems used for efficient operation.
- Interact with engineers who shared insights on energy efficiency, plant maintenance, and sustainable practices.
- Gain exposure to environmental and ecological considerations associated with hydroelectric projects.

The visit proved extremely beneficial in helping students visualize the practical aspects of energy generation, control, and management. It reinforced their classroom concepts and inspired them to pursue future projects related to renewable energy and sustainability.

5. Visit Coordination and Participation

Visit Coordinator:

- *Mr. Akshay Tajane*

Accompanying Faculty Members:

- *Dr. Rajan Lakra*
- *Mr. Shrikant Sonawane*

Total Number of Students: 55

The visit was conducted smoothly under the guidance of the coordinators and faculty members, ensuring that students actively participated and interacted throughout the session.

6. Acknowledgment

The Departments of Mechanical and Aerospace Engineering express sincere gratitude to the Honourable Management, Associate Dean Sir, Head of Department (Mechanical Engineering), and Head of Department (Aerospace Engineering) for their kind approval and encouragement.

Special thanks are also extended to the plant officials and engineers of Vaitarna Hydroelectric Power Plant for their warm hospitality, detailed technical explanations, and valuable guidance during the visit.

Lastly, heartfelt appreciation goes to all faculty and staff members of the Mechanical Department for their continued cooperation in making this industrial visit a grand success.

7. Conclusion

The industrial visit to Vaitarna Hydroelectric Power Plant was a remarkable learning experience for the students. It provided a firsthand understanding of how renewable hydro resources are efficiently utilized for power generation. The interaction with industry professionals helped students connect academic knowledge with real-world applications.

Such visits play a crucial role in shaping the professional and technical skills of engineering students, motivating them to contribute towards sustainable energy development and innovative engineering solutions in the future.