Field Visit Report

Topic: Efficiency Analysis of Water Pumps and Study of Water Purification Plant in the Baramati Urban Water Supply System in Collaboration with Maharashtra Jeevan Pradhikaran

Date of Visit: 12 Aug 2025

Place Visited: संगणकीकृत जलशुद्धीकरण केंद्र (Computerized Water Purification Plant)

Capacity: 7.508 MLD

BY:

1. Tejas Satish Katkar
2. Rudrapratap Haridas Deokar
3. Varad Prashant Kulkarni
4. Anushka Ganesh Bhosale
5. Dnyaneshwari Sandip Taware
6. Ankita Tukaram Solanki
7. Gore Anushka Pramod
8. Zagade Om Tushar
9. Karve Aditya Rajendra

Guidance BY: Mr. Shivaji Raskar Sir

1. Introduction

The field visit was organized to provide practical exposure to the working of a modern, computerized water purification facility. Such plants play a critical role in ensuring safe and clean drinking water for the community by removing impurities and harmful microorganisms.

2. Objectives of the Visit

- To understand the process of water purification in a computerized setup.
- To study the technology and equipment used in large-scale water treatment.
- To observe operational safety and maintenance practices.
- To study and analysis Efficiency and Power factor of Water Pump in water suppy scheme Baramati

3. Overview of the Plant

The plant visited has a purification capacity of 7.508 million liters per day, making it suitable for catering to a significant urban or semi-urban population. The system is

computer-controlled, which ensures efficient monitoring, operation, and control of the purification processes.

4. Water Purification Process (Observed/Explained)

The plant follows a series of steps for purification, which may include:

1. Raw Water Intake: Water from a nearby source (river, dam, or reservoir) is pumped into the plant.

2. Screening: Large debris, leaves, and other floating matter are removed.

3. Coagulation & Flocculation: Chemicals like alum are added to bind fine particles into larger flocs.

4. Sedimentation: The water is left in tanks so that heavy flocs settle at the bottom.

5. Filtration: Water passes through sand, gravel, and activated carbon filters to remove remaining impurities.

6. Disinfection: Chlorination or UV treatment is done to kill harmful bacteria and viruses.

7. Computerized Monitoring: Sensors measure turbidity, pH, residual chlorine, and flow rate in real-time.

8. Storage & Distribution: Purified water is stored in reservoirs and supplied through pipelines.

5. Technologies Used

- PLC (Programmable Logic Controller) for process automation.

- SCADA (Supervisory Control and Data Acquisition) for centralized monitoring and control.

- Real-time sensors for water quality parameters.

- Automatic chemical dosing systems for accurate treatment.

6. Benefits of Computerization

- Precise monitoring of water quality.

- Quick detection of faults or anomalies.

- Reduced human error in chemical dosing.

- Better record-keeping and data analysis.

7. Observations During the Visit

- The plant was well-maintained and equipped with safety features.

- The staff demonstrated the control panel and explained the process flow.

- Computerization allows operators to view and control each stage from a central console.

- The environment around the plant was clean and secure.

8. Conclusion

The visit provided valuable insights into the functioning of a computerized water purification plant. It demonstrated how automation improves efficiency, reliability, and water quality. This knowledge will be useful for understanding modern water treatment methods and their role in public health and urban infrastructure.

9. Photographs

10. Additional Observations from Field Notes

- Main source of water: Canal

- 100 HP pump with a capacity of 4 lakh liters per hour.

- Stages of purification process: Irrigation, alum dosing, flocculation, sedimentation, filtration, chlorination.

- Disinfection is carried out using chlorine gas.

- Electrical connection types used: Star connected and Delta connected.