



Department of Electrical and Electronics Engineering

A brief report of Industrial Visit

Shivanasamudra hydro & solar power plant, Mandya (Dist.) Karnataka

DATE: 11.11.2024

On November 11, 2024, the Department of EEE at New Horizon College of Engineering organized an insightful industrial visit for 5th-semester, Section-A, EEE students. A total of 60 students, accompanied by a faculty member and a lab technician, visited the Shivanasamudra Hydro & Solar Power Plant in Mandya, Karnataka.

The Shivanasamudra Hydro Plant, established in 1902, holds the distinction of being Asia's first of its kind with a capacity of 42 MW. Additionally, the Shimsha Hydel Plant produces 17.2 MW, the Solar Plant 10 MW, and the Cauvery Hydro Plant 3 MW. Mr. Saurav, the technician, guided the students through various sections, significantly enhancing their understanding of power generation.


Industrial Visit

 **10 MW Solar Power Plant,**

Karnataka Power Corporation Limited (KPCL),
Shivanasamudra,
Belakavadi village, Mandya - 571417

 11 November 2024

 7:00 AM to 5:00 PM

 III Year (A-Section)



Faculty Coordinator
Dr. B Gunapriya
Associate professor - EEE

Convenor
Dr. Sakthivel Aruchamy
HoD - EEE



1. Hydro Power Plant Overview

- Technician demonstrated the layout: penstocks, turbines, transformers, water reservoir, and Shimsha Hydropower Plant.

2. Solar Power Plant Overview

- Maintained by BHEL under Karnataka Power Corporation.
- Capacity: 10 MW, divided into 3 parks (3.5 MW, 1.5 MW, 5 MW).
- Operated via SCADA for efficient control.
- Estimated cost: ₹75 crores by Eversion Energy Pvt. Ltd.

3. Solar String Working Model

- Each panel: 72 cells (6×12), capacity 40-44 V.
- String: 20 panels generate 800-880 V DC, 140 A.
- SMC modules connected to strings for power conversion.

4. Solar Panel Connections

- **Series:** Voltage adds up (20 panels = 800 V DC).
- **Parallel:** Current adds up, voltage constant.
- Inclination angle: 12°, peak power: 11 AM - 1 PM.

5. Inverter Section

- Converts DC to AC for transmission (800 V DC → 400 V AC → 11 kV).
- 6 inverter modules per section.
- Auxiliary transformers used for voltage step-up.
- Voltage progression:
 - Panel: 40 V DC
 - String: 800 V DC
 - Inverter output: 400-420 V AC
 - Transformer output: 11 kV AC

6. Performance Metrics

- **DC Input Power:** 445 kW
- **Active Power:** 442 kW
- **Reactive Power:** 140 kVar
- **Efficiency:** 98.9%
- **Cumulative Active Power:** 6782.93 MWh
- **Cumulative Reactive Power:** 1351.85 MVarh
- **Today's Active Power:** 1420 kWh