

# **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.



Department of Electrical and Electronics Engineering

# Industrial Visit



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

iii 11 November 2024

① 7:00 AM to 5:00 PM

ഷ്ട III Year ( A-Section)

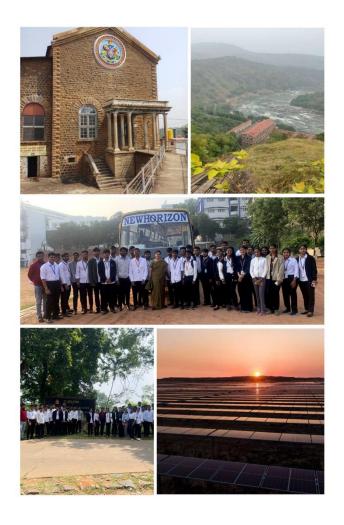
Faculty Coordinator **Dr. B Gunapriya**Associate professor - EEE

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  $\rightarrow$  400 V AC  $\rightarrow$  11 kV).
- 6 inverter modules per section.
- Auxiliary transformers used for voltage step-up.
- Voltage progression:

Panel: 40 V DCString: 800 V DC

Inverter output: 400-420 V ACTransformer 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