

REPORT

on

Industrial Visit

:

“OPTCL Grid Substation, Mendhasal”

Date : 11th September, 2025



Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

**Centurion University of Technology and Management,
Odisha, India**

Introduction :

The Department of Electrical and Electronics Engineering (**EEE**), School of Engineering and Technology (**SoET**), Centurion University of Technology and Management (**CUTM**), Bhubaneswar Campus, arranged an industrial visit for its students to the **OPTCL Grid Substation at Mendhasal** on **September 11, 2025**. The visit offered an invaluable opportunity to observe a 400/220/132/33 kV grid substation in operation. Students examined key high-voltage equipment, including a 375 MVA power transformer, which operates on the principle of electromagnetic induction to manage voltage levels.

The session also provided a detailed look at the station's robust **earthing system**, featuring an **underground mat** designed to safely dissipate fault currents and **lightning surges**, thereby protecting both equipment and personnel. This direct exposure to large-scale power systems equipment successfully reinforced their theoretical knowledge with real-world applications.

Objectives :

- To provide students with practical exposure to the operation of high-voltage equipment like transformers, circuit breakers, and isolators.
- To familiarize them with the function of current transformers for metering and protection, and the principles of grid operation.
- To enhance their understanding of industrial safety protocols, particularly the critical role of a comprehensive earthing system in a high-voltage environment.

Key Outcomes :

- **Equipment Familiarity:** To familiarize students with high-voltage equipment like power transformers, circuit breakers, and isolators.
- **Transformer Operation:** To explain the operating principle of the 375 MVA transformer via electromagnetic induction.
- **System Metering:** To provide insights into how Current Transformers (CTs) are utilized for system metering and protection.

- **Earthing System:** To detail the design and function of the underground earth mat for comprehensive system grounding.
- **Safety Protocols:** To emphasize the importance of the earthing system in safeguarding personnel and protecting equipment.


Feedback from Participants:

Students described the **industrial visit** as **highly insightful**, especially in understanding the practical scale and operation of a major grid substation. They appreciated the detailed explanation of how the **375 MVA** power transformer steps down voltage based on grid demand and how the **earthing mat** safely dissipates fault currents into the ground. Many noted that observing the equipment firsthand clarified complex classroom concepts on power system protection. The students were accompanied by **Dr. Smruti Ranjan Nayak**, Assistant Professor in the EEE department, who guided them and facilitated meaningful interactions with the substation experts. Faculty feedback stressed that such practical exposures are essential for developing a deeper engineering perspective.


Glimpses of the Visit :



Industrial Visit
to
OPTCL Mendhasala Grid Substation



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ODISHA POWER TRANSMISSION CORPORATION LIMITED
CONTROL ROOM
400/220/132/33 kV GRID SUBSTATION
MENDHASALA

GPS Map
Camera Lite

Students of **CUTM** visited the 440/220/132/33 kV **OPTCL Mendhasala Grid** on an **industrial tour**, observing circuit breakers, isolators, CTs, a 375 MVA transformer, and earthing systems, gaining practical insights into power transmission, protection mechanisms, and safety practices essential for **real-world grid operations** and **electrical engineering** applications.

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Butterfly Garden (Centurion University), Advanced skill development centre, Jatni Rd,
Jatni, Odisha 752050, India

Latitude
20.176951666666664°

Longitude
85.70773166666667°

Local 10:14:07 AM
GMT 04:44:07 AM

Altitude 33 meters
Thursday, 11.09.2025



Geo-Tagging Camera

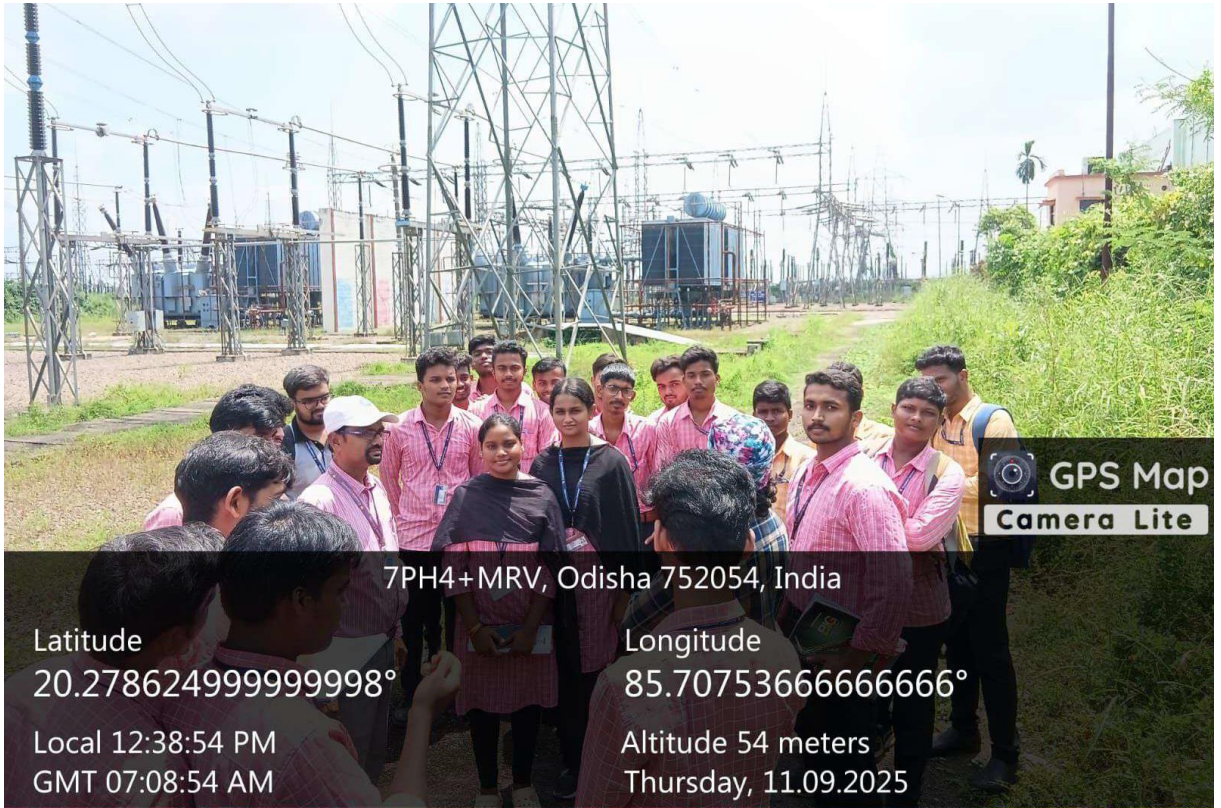
2025/09/11 11:50

Khordha, Odisha, India

7PH4+MRV, Odisha 752054, India

Lat 20.278115 Long 85.707303





GPS Map
Camera Lite

7PH4+MRV, Odisha 752054, India

Latitude
20.278624999999998°

Longitude
85.70753666666666°

Local 12:38:54 PM
GMT 07:08:54 AM

Altitude 54 meters
Thursday, 11.09.2025



GPS Map
Camera Lite

7PH4+MRV, Odisha 752054, India

Latitude
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Longitude
85.70722833333333°

Local 12:21:30 PM
GMT 06:51:30 AM

Altitude 52 meters
Thursday, 11.09.2025



 **GPS Map**
Camera Lite

7PH4+MRV, Odisha 752054, India


Latitude
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Longitude
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GMT 06:38:17 AM

Altitude 54 meters
Thursday, 11.09.2025



 **GPS Map**
Camera Lite

7PH4+MRV, Odisha 752054, India

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Longitude
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GMT 07:45:22 AM

Altitude 52 meters
Thursday, 11.09.2025