

DEPARTMENT OF PHYSICS

FIELD TRIP TO LUXETTIPET SUBSTATION: 33/11 KV



GOVERNMENT DEGREE COLLEGE, LUXETTIPET
DIST.MANCHERIAL

**DEPARTMENT OF PHYSICS
GDC LUXETTIPET, DIST.MANCHERIAL**

FIELD VISIT:

Luxettipet Power Substation : 33/11 KV

DATE OF VISIT: 03.01.2022

OBJECTIVES OF THE FIELD TRIP:

To infuse a sense of practical learning and better understanding of the entire electric power distribution system, the students were taken for a field visit to Power substation. Being science graduates, students are expected to have the basic knowledge about the working of various equipments associated with power distribution, issues and rectification, and safety precautions to be followed at domestic level.

NAMES OF FACULTY WHO PARTICIPATED: 1. Dr. Jai Kishan Ojha

2. S. Srinivas

NO. OF STUDENTS PARTICIPATED: 40

RESOURCE PERSON: R. Srinivas, Assistant Engineer, Luxettipet

POINTS EXPLAINED BY ASSISTANT ENGINEER:

- The working of a step up and step down transformer was physically demonstrated to the students.
- The concept and importance of earthing was explained in detailed.
- The usage of three phase power and the relative advantages and disadvantages were made to understand.
- The working of power breakers due to short circuiting at any point was shown to the students.
- The purpose of capacitors to improve the quality of the electrical supply and thus improve the efficiency of the power systems was explained. In transformers, capacitor banks are used to correct power-factor lag or phase shift in alternating-current (AC) power supplies.



PROBLEMS ENCOUNTERED:

No problem was encountered as all the precautionary measures were adhered to strictly.

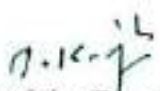
EXPENDITURE INCURRED:

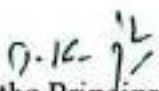
No expenditure was incurred as the power substation is nearby the college.

OUTCOMES OF THE VISIT:

The students gained practical knowledge about the functioning of various machines available at the power station and the power distribution made to various villages from a sub-station; the parameters recorded at the sub-station. At the workshop, the actual components that make up various parts were understood to some extent. This analysis of outcomes is made basing on the feed-back given by the students.

Signature of the Dept In-Charge


Signature of the Faculty


Signature of the Principal

Principal
Govt. Degree College
Luxurpet-504 215, Dist. Mandya

The Power substation has a workshop for repairing the damaged transformers. The students were able to practically understand the different parts of a transformer, the primary winding, secondary winding and core. The purpose of using coolant oil was also explained to students.



The substation at Luxettipet is a 33/11 Kv substation and has feeders to Modela, venkatrao pet and Gudem villages. 33kV to 11kV transformers steps down the voltage to a safe level, which is then distributed via 11kV feeders to homes and businesses. The reason is that the higher the transmission voltage, the lower the transmission losses will be. Therefore, the longer the distances that the power needs to be transferred, a higher voltage is used to reduce the transmission losses. Once it has reached a substation, the voltage is then stepped down.

The 11kV lines are used in residential areas and it feeds the local transformers, which then distributes power to the buildings in the area. 33kV lines on the other hand involve much higher voltages and are used to distribute power from one small sub-station to another.

Amorphous Transformer: The cores of conventional transformers consist of stacks of laminations that are made from silicon steel with an almost uniform crystalline structure (CRGO). In transformers with **amorphous cores**, a ribbon of steel is wound to form the core



- The purpose of laying gravel floor in the substation to reduce step Potential and touch potential when operators works in the area. Stone increases resistance between our foot and the ground. Gravel prevents vegetation and growth of small weeds, plants and grass inside the switch yard. Stones protect from fire when oil spillage takes place.

KNOWLEDGE INPUTS GIVEN TO THE STUDENTS:

An electrical substation is a subsidiary station of an electricity generation, transmission and distribution system where voltage is transformed from high to low or the reverse using transformers. Electric power may flow through several substations between generating plant and consumer, and may be changed in voltage in several steps. A substation that has a step-up transformer increases the voltage while decreasing the current, while a step-down transformer decreases the voltage while increasing the current for domestic and commercial distribution. Substations generally have **switching, protection and control equipment** and one or more transformers. In a large substation, circuit breakers are used to interrupt any short-circuits or overload currents that may occur on the network.





FEED BACK PROFORMA
FIELD TRIP

ELECTRIC SUBSTATION VISIT ON 03.01.2021

1. Name of the Student: ch. Sushmita

2. Class: B.Sc (MAT) Final year

3. H. T No: 439-20-4112

4. Subjects learnt or equipment observed at the place:

we went to Electric substation, it is an electrical generation transmission & sub distribution system. we learnt that, substations transform voltage from high to low & perform any of several other

5. Benefits of the visit or how it enriched your curriculum? Important functions

we learnt basics of electric substation and it play a critical role in the power industry. They support the transmission grid in moving power from generation sources to customer load, while electrical utilities use them for system protection.

6. Difficulties experienced in the visit :

This is no difficulties in this visit, but we scared that, for not even to move beside of that substations.

7. Overall opinion of the program:

we experienced new things about electric substation. we felt very excited during this visit. It is very interesting.

ch. Sushmita
Signature of the student

FEED BACK PROFORMA
FIELD TRIP

ELECTRIC SUBSTATION VISIT ON 03.01.2021

1. Name of the Student: Prem Kumar

2. Class: B.Sc (mpcs)

3. H. T No: 439-20-4129

4. Subjects learnt or equipment observed at the place:

We went to Electric Substation, it is an electrical generation transmission & sub distribution system.

5. Benefits of the visit or how it enriched your curriculum?

We learnt basis of electric substation and it play a critical role in the power industry.

6. Difficulties experienced in the visit :

There is no difficulties in this visit, but the we scared to not even to move beside of that substation.

7. Overall opinion of the program:

We visit the Electric Substation and we get more information about substation

J. Ramkumar
Signature of the student

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FEED BACK PROFORMA
FIELD TRIP

ELECTRIC SUBSTATION VISIT ON 03.01.2021

Name of the Student: K. Sagar

Class: B.Sc (MPGS) Final Year

H. T No: 439-20-4137

Subjects learnt or equipment observed at the place:

We are went to the electric substation, and that we observed the generators, and transformations, and earth lines high and low voltage transformers.

Benefits of the visit or how it enriched your curriculum?

We are learnt the basics of the current and electricity and power supply and different uses and benefits of the electricity we saw the sources of the electricity.

Difficulties experienced in the visit :

There is nothing difficult in this visit but some are scared to see the transformers in the substation.

Overall opinion of the program:

This experience is good. it is very useful to me and my friends, we enjoyed the lot and we learnt the basics of the electricity, so it is good for us.



Signature of the student