



# RAJARSHI SHAHU COLLEGE OF ENGINEERING, BULDANA

DEPARTMENT OF ELECTRICAL ENGINEERING

## A REPORT ON INDUSTRIAL VISIT SUBSTATION 33/11KV AT SAGAWAN

Total Number of Students Present 25

Delivered Person / Substation In-charge. :-Mr. Ganesh Rane (Operator)

Date of Visit: - 25-05-2023

The substation would be a combination of switching, controlling, and voltage step-down equipment arranged to reduce sub-transmission voltage to primary distribution voltage for residential, commercial, and industrial loads.

Power substation consists of:

1. **Switchgear:** isolators, circuit breakers, earthing switches etc.
2. **Control gear:** current transformers, voltage transformers, contactors etc.
3. **Protection equipment:** relays, fuses, surge arrestors etc.
4. **Power Transformers**

The main equipment in substation consists of:

**Transformers:** To step down the 33kV primary voltage to 11kV suitable for distribution purpose.

**Circuit breakers:**

Circuit breakers were needed so as to disconnect and isolate the faulted section.

**Isolating Switches:**

It is a requirement that whenever maintenance or repair work is to be carried out on equipment in a substation or feeders, it be disconnected from the supply by an isolator, normally operated on no load. Isolators are normally interlocked with circuit breakers and earthing switches.

**Busbars:**

The incoming and outgoing circuits were connected to busbars. Flexible ACSR stranded conductor bus bars supported from two ends by strain insulators was chosen for the 33kV busbar.

**Protective relays:**

Whenever a fault occurs the protective relay would operate and send a trip signal to circuit breakers. The relays were housed in panels in the control room and Ring Main Units.

**Surge arrestors (lightning arrestors):**

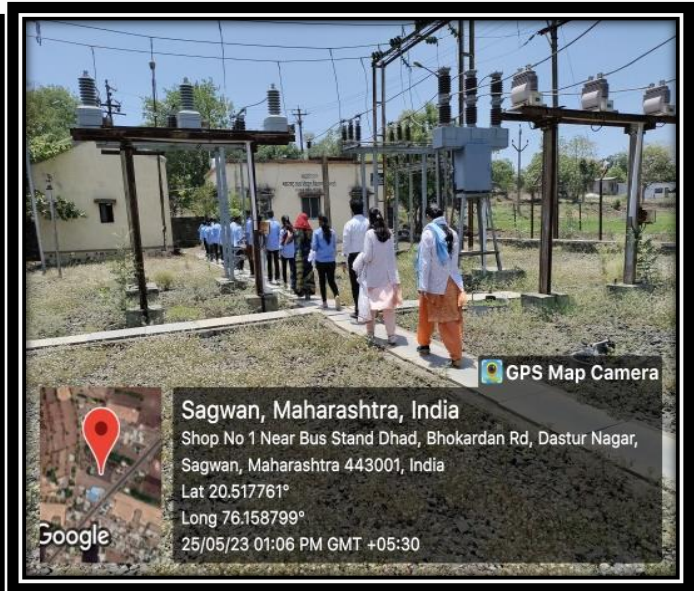
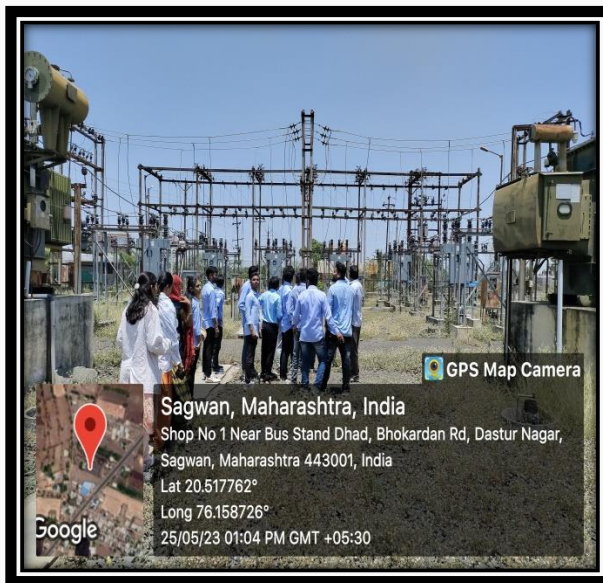
Surge arrestors would protect the substation equipment from lightning and switching surges.

**Earthing switch:**

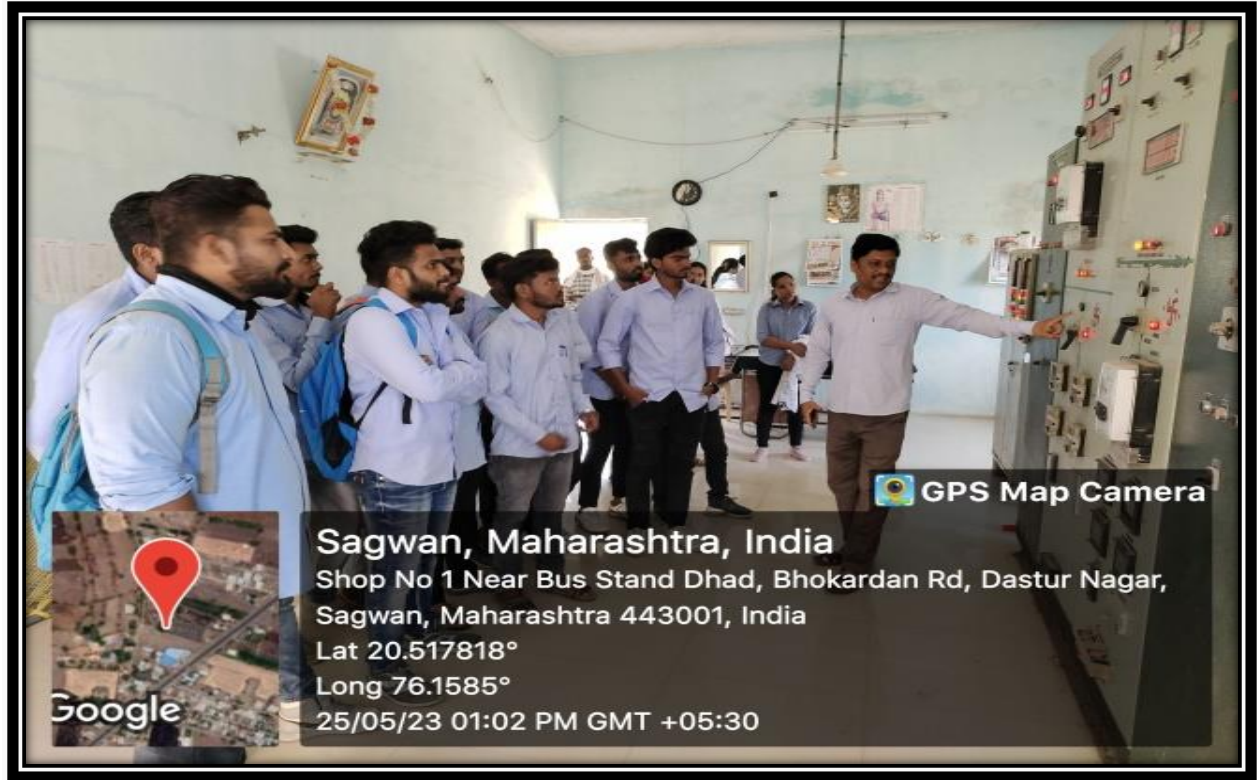
The earthing switch is usually connected between the line conductor and earth and is mounted on the frame of isolator. Normally it is in open position. When the line is disconnected the earthing switch is closed to discharge the trapped charges to earth.

**Station earthing system:**

The function of station earthing system is to provide a low resistance path for flow of earth fault currents (for proper operation of protection devices) and safety of equipment and personnel. Current and voltage transformers were needed so as to step down the line current for the purpose of metering and relaying.







Prof.P. T. Pathe  
Visit In-Charge

Prof. Sagar R. Sonone  
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