

# Substation design

Design



Current Transformer protection 6. Voltage Transformer To step-down voltages for measurement, control 7. Lightning Arrester To discharge lightning over voltages and switching over voltages to earth Functions of substation equipments Cont'd... 8. Shunt reactor To control over voltages by providing reactive power compensation 9. Neutral-Grounding resistor To limit earth fault current 10. Coupling capacitor To provide connection between high voltage line & PLACE equipment 11. Line -Trap To prevent high frequency signals from entering other zones. 12. Shunt capacitors To provide compensations to reactive loads of aging power factors 13.

Power Transformer To step-up or step-down the voltage and transfer power from one a. C. Voltage another a. C. Voltage at the same frequency.

Compensation of long lines. Functions of Associated system in substation System 1 . Substation Earthling system Earthman Earthling spikes Earthling risers To provide an Earthman for connecting neural points, equipment body, support structures to earth. For safety of personnel and for enabling earth fault protection. To provide the path for discharging the earth currents from neutrals, faults, Surge Arresters, overheads shielding wires etc. Tit safe step-potential and touch potential. 2. Overhead earth wire shielding or Lightning masts. To protect the outdoor substation equipment from lightning strokes. 3. Illumination system (lighting) for switchboard buildings roads etc. Cont'd.. 4. Protection system protection relay panels control cables circuit breakers ACTS, VATS etc. To provide alarm or automatic tripping of faulty part from healthy part and also to minimize damage to faulty equipment and 5. Control cable For Protective circuits, control circuits, metering circuits, communication circuits .

Power cable To provide supply path to various auxiliary equipment and machines. 7. PLACE system power line carries communication system line trap coupling capacitor PLACE panels For communication, telemetry, tolerant, power line carrier protection etc. Cont'd... 8. Fire Fighting system Sensors, detection system water spray system fire prop. Panels, alarm system Watertown and spray system To sense the occurrence of fire by sensors and to initiate water spray, to disconnect power supply to affected region to pin-point location of fire by indication in control room. 9.