

INSTRUMENT TRANSFORMER (CTs, PTs) SELECTION, APPLICATION AND TESTING

COURSE DESCRIPTION:

Current Transformers

- CT primary & secondary rated currents
- Errors– reason and influencing factors
- Metering CT: Specification, application, ISF
- General protection class CT: Specification, ALF, voltage developed across CT secondary
- Special protection class: Specification, Saturation, concept of KPV and Exciting current limit, CT calculation for high impedance differential scheme
- CT calculation for numerical relay application
- CBCT– functioning and application in high resistance grounded / ungrounded systems
- *Case studies*: Saturation of CT; Selection of CT; Maintenance replacements; Applications; Over-specification and bulky CT; wrong applications in energy metering

Voltage Transformers

- Connections : star– star & star – open delta connections
- Errors and accuracy
- Metering PT : Specification, application
- Protection PT: Specification, application, voltage factor and grounding
- Protection of PT and associated circuits : fuse on primary side and fuse on secondary side
- *Case studies* : Reasons for PT failure; Fuse failure and prevention of protection scheme from initiating tripping.

Testing

Current Transformer

IR measurement; Polarity check; Ratio Check; Lead resistance measurement; Excitation characteristics verification; Secondary and primary injection tests.

Case studies : Detect faults in CT and CT circuits, Prevent protection failure by identifying defective CTs, On line testing / checking of CTs and CT circuits .

Potential Transformer

IR measurement; Polarity check; Ratio Check; Secondary and primary injection tests; Fuse failure scheme checks

Case studies : Failure of PT due to ferro-resonance and preventive action; On line testing / checking of PTs and PT circuits