

Lecture-14

Transformer, generator Protection

Topic Covered

- Transformer Protection
- Generator Protection

Transformer Protection

- Gas and Temperature Monitoring
- Differential and Ground Fault Protection

Transformer Protection

- Gas and Temperature Monitoring
- Differential and Ground Fault Protection

Transformer Protection

Gas Monitoring Relays:

- These relays will sense any amount of gas inside the transformer. A tiny little amount of gas will cause transformer explosion.

Temperature Monitoring Relays:

- These relays are used to monitor the winding temperature of the transformer and prevent overheating.

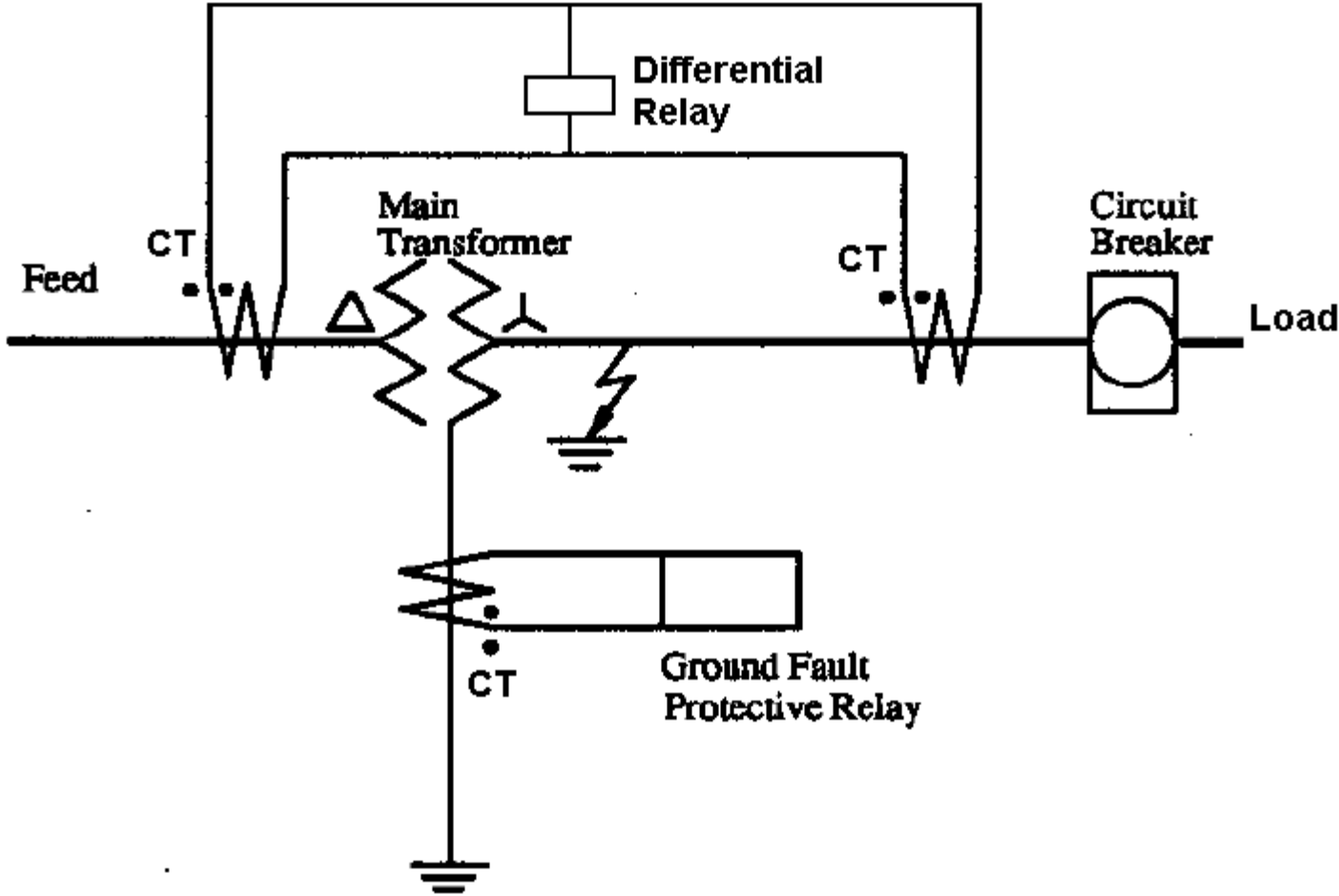
Transformer Protection

Ground Fault

- For a wye connection, ground fault can be detected from the grounded neutral wire.

Transformer Protection

Ground Fault and Differential Relay

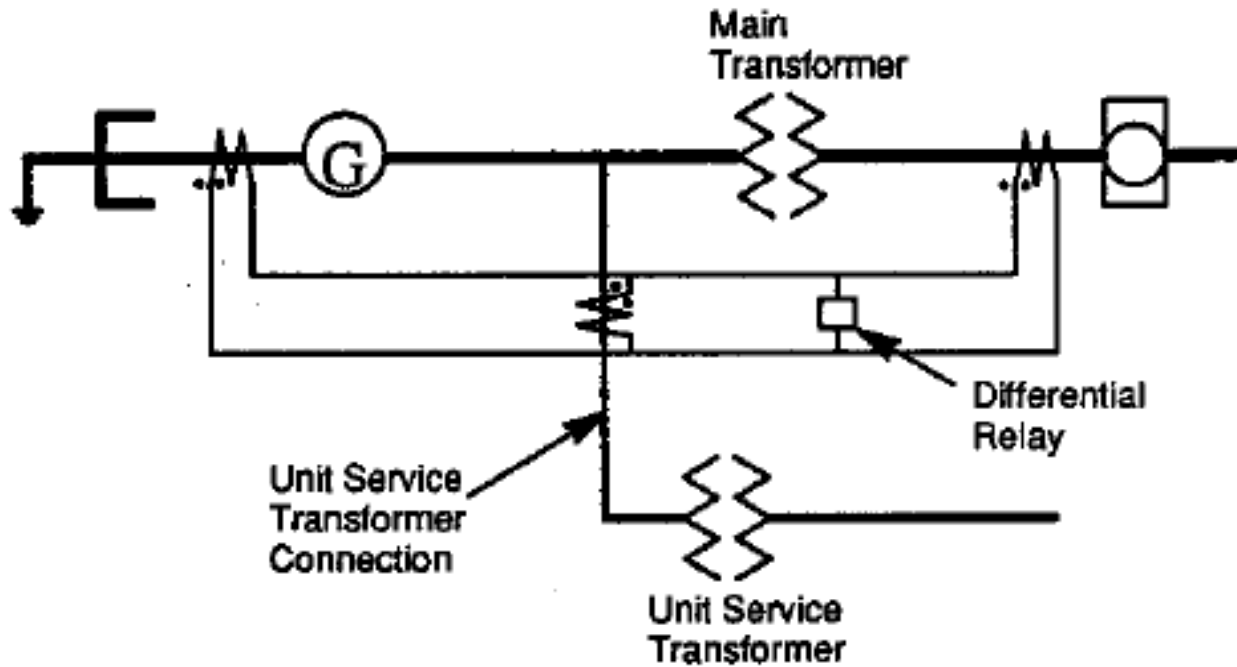


Generator Protection

- Differential and Ground Fault Protection
- Phase Unbalance

Generator Protection

Differential and Ground Fault

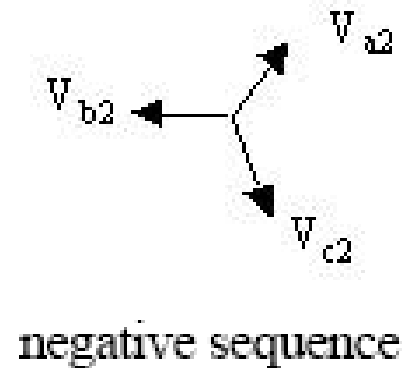
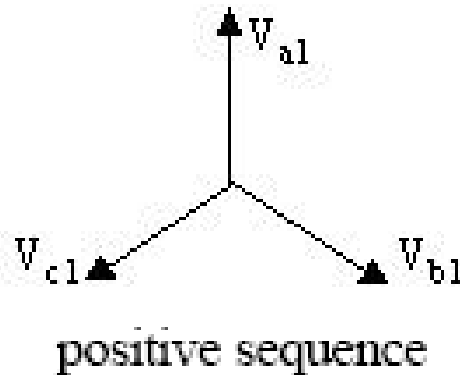


Generator Protection

Phase Unbalance

Some Definitions..

- Negative Sequence
 - Voltage example:



Generator Protection

Phase Unbalance

Some Definitions..

- Negative Sequence:
 - The direction of rotation of a negative sequence is opposite to what is obtained when the positive sequence are applied.
 - Negative sequence unbalance factor:
 - Factor= V_-/V_+ or I_-/I_+

Generator Protection

Phase Unbalance

- Negative Sequence Relay will constantly measure and compare the magnitude and direction of the current.