



## THE CURRENT TRANSFORMER MUST

1. Withstand operational voltage and over voltage in the network
2. Withstand rated primary current in continuous operation without exceeding maximum allowed temperature rise.
3. Be capable to sustain thermal and mechanical stresses developed due to system fault current
4. Feed current to external circuit with specified accuracy at specified primary currents.

## DESIGN

'AE' manufacture current transformers in both type i.e. Live Tank Design and Dead Tank Design FIG. 3 shows basic construction of Dead Tank design whereas FIG. 4 shows construction of Live Tank design.

Current transformer can be designed for single ratio or multi ratio. The ratio selection can be achieved by providing two or four sections of primary for series/parallel reconnection as show in FIG. 5 (a) and FIG. 5(b). However the current ratios shall be in proportion of 1:2:4 The advantage of this type of ratio selection is that output from each secondary remains constant for any selected ratio.

Ratio selection is also possible by giving taps on the secondary winding as shows in FIG. 6(b). Advantage of this type is that ratio can be achieved in any multiple fo the lowest ratio. It is also possible to change the ratio on CT without taking shutdown on the main system. However, it is obvious that output rating shall change as per the ratio.

For multi ratio CT. 2 or 3 ratios can be provided by primary Series /Parallel reconnection and additional ratios by secondary tape shown in FIG 6(a).

High output (Burden/knee point voltage/Accuracy Limiting Voltage) with minimum excitation current and better accuracy class can be provided on the CT if primary current is higher. Higher output can also be obtained with multi-turn primary design. Limitations on No. of primary turns are however, imposed by short time current rating and peak dynamic current. It is advisable to provide minimum primary turns to limit the dynamic forces and mechanical stress experienced by the CT under fault condition. the limitations on output of each core of CT also depends on a number of cores provided in a single CT.

## CONSTRUCTION

### Core & Secondary winding:

High permeability. CRGO silicon steel is used as core material. Toroidal cores from continuous strips are made at our works and annealed in controlled atmosphere to achieve best quality secondary cores. Secondary winding is done on automatic winding machine and is distributed equally on the periphery of the core to minimise leakage reactance. Best quality enamelled wire with adequate inter-layer insulation is provided to avoid secondary winding short circuiting in most adverse conditions.