

Notes on Current Transformer (CT) Selection for TruWave Active Harmonic Filters

Current transformers (CT's) are current sensing devices which need to be installed either on the line side or the load side of the active harmonic filter (AHF). The CT's sense the harmonic currents being produced by VFDs or other non-linear loads. The AHF uses this information to determine how much harmonic current to inject and at what frequency in order to inject the right amount of harmonic compensation at any given time.

Step 1 - Selecting the CT Ratio

Select a CT ratio that is equal to or greater than the bus rating of the electrical network the active harmonic filter will be operating on:

- i. Example (1) 1200A bus gets a set of 2000A CTs
- ii. Example (2) 600A bus gets a set of 1000A CTs
- iii. Example (3) 2000A bus gets a set of 2000A CTs
- iv. Example (4) 2500A bus gets a set of 3000A CTs

Step 2 - Selecting CT Shape Based on Physical Bus Size

Very physical bus size

| Type | Amperage | Dimensions (ID - Inner Diameter) |
|-------------|-------------|----------------------------------|
| Round | 1000 - 2000 | 4" Circular ID |
| Round | 3000 - 5000 | 6" Circular ID |
| Rectangular | 1000 - 5000 | Application 2-3/4" x 6-5/8" |

- Applications with two or more AHFs in parallel almost always require either the 6" Circular ID or Rectangular CT's
- Applications where CT's are mounted directly on the electrical bus typically use the Rectangular CT's

Step 3 - Selecting the Number of CT's

- If only three phase loads are present downstream of the CT's mounting location, two CT's can be selected.
- If a mix of three phase and single phase loads are present downstream of the CT's mounting location, three CT's should be selected.
- If the single and three phase load mix is uncertain, three CT's should be selected.

Note: If a customer is supplying their own CT's they must have a 1% accuracy and be suitable for at least 400Hz.

HPSTA19 - CTSTAHF
February - 2024